

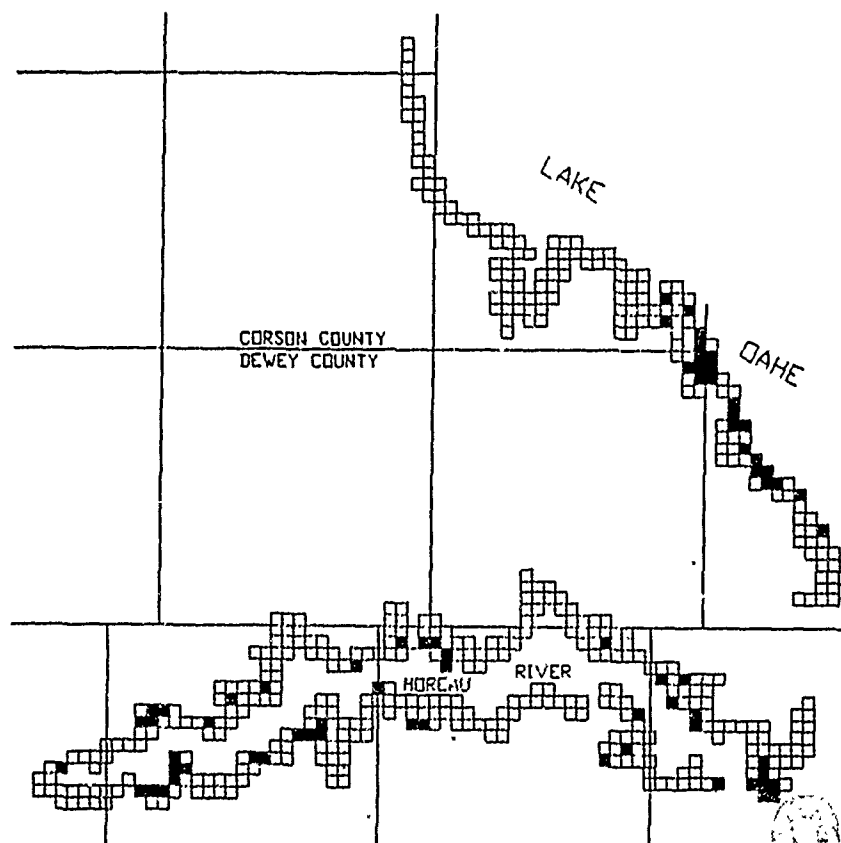
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THE 1986 CULTURAL RESOURCE INVENTORY OF PORTIONS OF LAKE OAHE, CORSON AND DEWEY COUNTIES, SOUTH DAKOTA



VOLUME 1

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PREPARED BY: LARSON-TIBESAR ASSOCIATES
421 SOUTH CEDAR STREET
LARAMIE, WYOMING

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THE 1986 CULTURAL RESOURCE INVENTORY
OF PORTIONS OF LAKE OAHE, CORSON AND DEWEY
COUNTIES, SOUTH DAKOTA

VOLUME 1

by:

Paul H. Sanders
Dori M. Penny
Thomas K. Larson
Michael L. McFaul
and
Keith H. Dueholm

Thomas K. Larson, Principal Investigator
Paul H. Sanders, editor

Corps of Engineers, Omaha District
6012 U.S. Post Office and Courthouse
Omaha, Nebraska 68102

Contract Number: DACW45-86-C-0246

Report Prepared By:

Larson-Tibesar Associates
421 South Cedar Street
Laramie, Wyoming 82070


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ABSTRACT

→ In 1986 Larson-Tibesar Associates conducted an intensive cultural resource inventory of approximately 10,500 acres along portions of the west bank of Lake Oahe in Corson and Dewey counties, South Dakota for the U.S. Army Corps of Engineers, Omaha District. The inventory resulted in the investigation of 44 archeological sites which included the recording of 16 new prehistoric sites, 15 new historic sites, two new sites with both historic and prehistoric remains and 27 isolated finds and the reinvestigation of 11 previously recorded sites. Historic components were added to four previously recorded sites (39C019, 39DW240, 39DW242 and 39DW256).

The new sites consist of historic and prehistoric artifact scatters, historic depressions, foundations and cemeteries and a few rock cairns. Prehistoric diagnostic artifacts indicate an occupation of the project area from Paleoindian to the Extended variant of the Coalescent Tradition. The evidence for preceramic occupations within the project area comes from a few isolated finds and a burial recovered in 1979 from 39DW35. One site, Molstad Village, is a National Historic Landmark, five sites are considered eligible, 22 components at 20 sites are believed to be potentially eligible while 22 components at 21 sites and all 27 isolated finds are not considered eligible. (KT) 

ACKNOWLEDGEMENTS

Our archeological investigation of a portion of Lake Oahe in Corson and Dewey Counties, South Dakota was aided by numerous individuals. Mr. Charles Murphy, Tribal Chairman, Standing Rock Sioux Tribe and Mr. Morgan Garreau, Cheyenne Tribal Chairman, Cheyenne River Sioux Tribe and members of their respective Real Estate and Law Enforcement offices provided access and valuable information pertinent to our investigation. The people of Mobridge are also thanked for their assistance, particularly Mr. Bill Jay and Mr. Kenneth Zandstra. Mr. Marion Travis was especially helpful concerning the archeology of the area while his collections provided a wider glimpse of the past.

Mr. Robert Alex and Ms. Patricia Hofer of the South Dakota Archaeological Research Center provided valuable background information for the area and graciously allowed full use of their facilities. Mr. J. J. Hoffman, National Park Service, also provided information concerning ceramic identification. Personnel with the U.S. Army Corps of Engineers also provided valuable assistance, especially Mr. Timothy Nowak and Mr. Richard Berg, archeologists and Mr. Stan Jackowitz, Lake Oahe Project Manager, Mobridge Area.

Additional assistance towards the completion of this report was provided by Mr. John Benko for his computer programming and data entry and Ms. Barbara Wright, Ms. Marlene Ware and Ms. Debbie McFaul for typing the manuscript.

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CHAPTER ONE INTRODUCTION

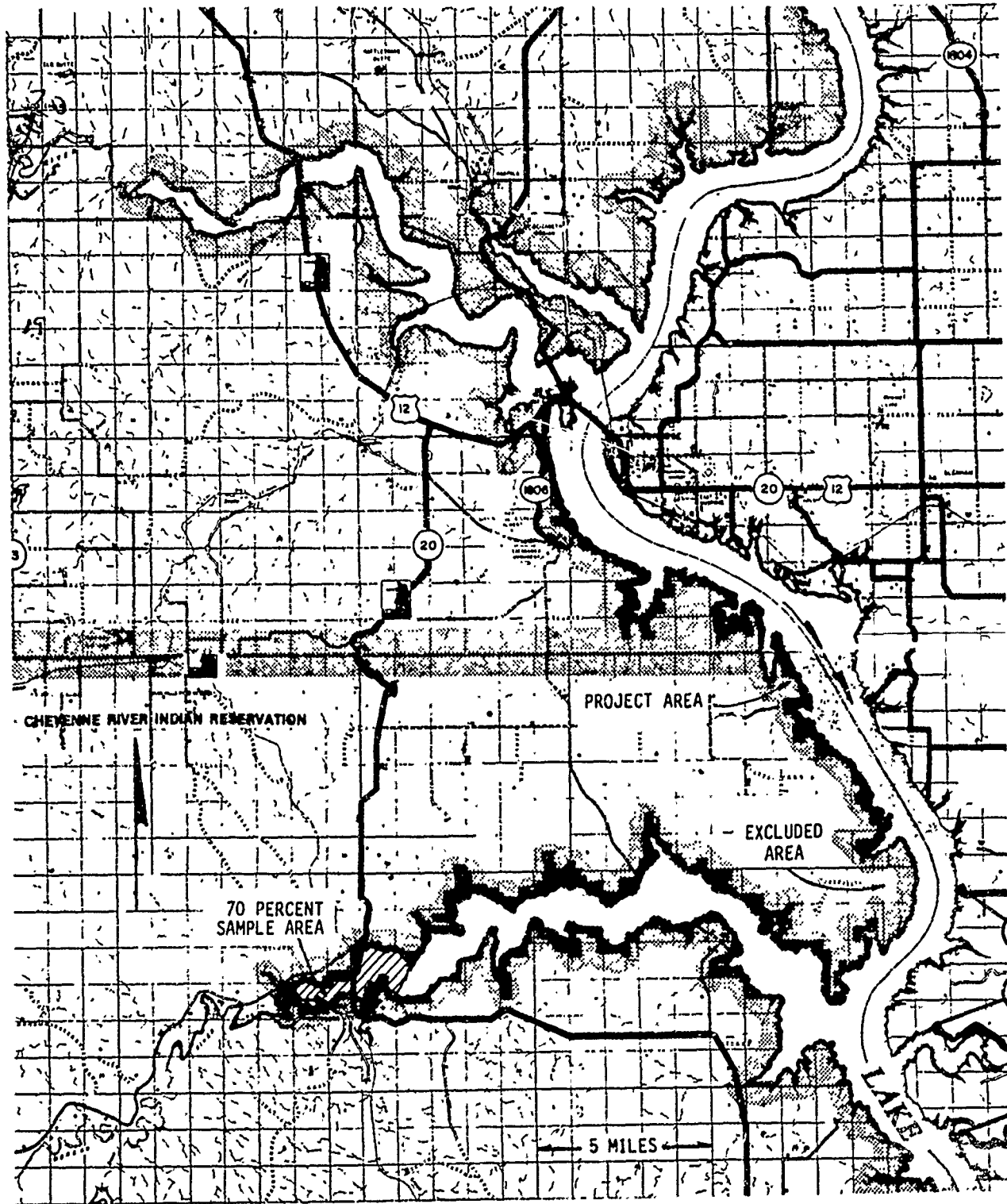
Paul H. Sanders

In August and September 1986, personnel from Larson-Tibesar Associates conducted an intensive cultural resource inventory of approximately 10,500 acres of the west bank of Lake Oahe, in Corson and Dewey counties, South Dakota for the United States Army Corps of Engineers (USACE), Omaha District (DACW45-86-C-0246). The project area includes all Lake Oahe Corps of Engineers land from U. S. Highway 20 south to and up the Moreau River excluding the Indian Memorial Recreation Area. It also excludes one large area approximately one mile northeast of the mouth of the Moreau River which had been previously inventoried (Winham and Butterbrodt 1983) (see Figure 1). Legal locations of the project area are summarized in Table 1.

The purpose of the inventory was to meet the Corps of Engineer's obligations and responsibilities under Executive Order 11593. Other legislation and documentation pertinent to this project include the following:

1. Antiquities Act of 1906, 43CFR Part 3.
2. The Reservoir Salvage Act of 1960 as amended by the Archeologic and Historic Preservation Act of 1974.
3. The National Historic Preservation Act of 1966, as amended.
4. National Environmental Policy Act of 1969.
5. Secretary of Interior Standards and Guidelines for Archeology and Historic Preservation.
6. The American Indian Religious Freedom Act.
7. Archaeological Resources Protection Act of 1979.
8. Implementing Regulations, 36CFR Parts 60, 63, 800 and 32 CFR Part 229.
9. South Dakota Guidelines for Cultural Resource Survey Reports.

Personnel for the Lake Oahe inventory included Thomas K. Larson (Principal Investigator), Paul H. Sanders (Project Supervisor), Ross G. Hilman (Crew Chief), Dori M. Penny (Historical Archeologist), John Fisher, Pat Persinger, Keith H. Dueholm, and Dale Wedel (Crew Members). Fieldwork started on August 11, 1986 and continued through September 18, 1986. Historical documents search was conducted by Paul H. Sanders, Keith H. Dueholm, Dori M. Penny and Thomas K. Larson. Historic sites were examined and evaluated by Dori M. Penny. Ancillary geoarcheological studies were



MAP ADAPTED FROM US ARMY CORPS OF ENGINEERS LAKE OAHÉ BOATING AND RECREATION MAPS.

Figure 1. Project area location.

Table 1. Project area legal locations.

USGS Mobridge Quadrangle

.18N., R.29E Sections 1, 12, 13
T.18N., R.30E Sections 18, 19, 20
T.19N., R.29E Section 36

USGS Moreau NW Quadrangle

T.16N., R.29E Section 6
T.16N., R.30E Sections 1, 3, 4, 5
T.17N., R.29E Section 36
T.17N., R.30E Sections 28, 31, 33, 34
T.18N., R.30E Sections 26, 27, 28, 29, 32, 33, 35, 36

USGS Moreau NE Quadrangle

T.17N., R.30E Section 1
T.17N., R.31E Sections 6, 7, 18, 17, 20, 21, 28, 33
T.18N., R.30E Sections 25, 36

USGS Moreau Quadrangle

T.16N., R.30E Sections 1, 4, 5, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18,
24
T.16N., R.31E Section 19

USGS Promise Quadrangle

T.16N., R.29E Sections 1, 3, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18,
19, 20, 21, 22, 24
T.16N., R.30E Section 7

USGS Trail City SW Quadrangle

T.16N., R.29E Sections 18, 19
T.16N., R.28E Sections 13, 23, 24

USGS Landreaux Butte Quadrangle

T.16N., R.30E Section 6
T.16N., R.29E Sections 1, 2, 3
T.17N., R.29E Sections 33, 34

conducted by Michael L. McFaul during September, 1986.

Weather conditions during August, 1986 were initially warm to hot and clear but changed to cool and moist in September. However, only one half day during September, 1986 was lost due to rain. The water level for Lake Oahe averaged between 1612 and 1614 feet. This is considered to be high, which covered considerable acreage to be inventoried.

The inventory resulted in the relocation of 11 previously recorded sites, 16 new prehistoric sites, 15 new historic sites, two sites with both historic and prehistoric components (39C0145 and 39DW117), and 27 isolated finds. Molstad Village (39DW234) is a National Historic Landmark. Excluding the latter, the remaining 43 sites are comprised of five components at five sites considered eligible, 22 components at 20 sites considered potentially eligible and 22 components at 21 sites not considered to contain sufficient information to be eligible for nomination to the National Register of Historic Places. Chapter Ten provides additional information concerning site eligibility.

The remainder of this report is segmented into discussions of the environmental setting, previous archeological investigations, cultural history, site descriptions, analyses and results and recommendations. Project area maps, site and isolated find forms and legal locations are provided in Volume 2. Site locations have also been provided on aerial photos and appropriate United States Geological Survey (USGS) topographic maps to the Corps of Engineers, Omaha District. All collected cultural materials will be curated at the South Dakota Archaeological Research Center at Rapid City, South Dakota. Catalogued items are listed with individual site forms (Volume 2).

Procedures for Documents Search

A documents search was conducted prior to the initiation of fieldwork. This phase of the project is considered critical to determining the number, location and type of archeological resources within a particular area and especially to prevent duplicating site numbers. The latter problem is quite prevalent within the Middle Missouri subarea as a result of the investigations conducted by the Smithsonian Institution River Basin Surveys (SIRBS) and other early investigators.

The primary source of information for archeological sites within South Dakota is at the South Dakota Archaeological Research Center (SDARC) in Rapid City. A documents search was conducted on August 8, 1986 by Patricia Hofer with that facility. The information provided consists of a list and location of sites within one mile of the project area. Table 2 is a list of these 40 sites, their description, temporal affiliation and their status as determined during the field investigation. In addition, Table 3 provides a summary of their status as determined by the inventory. Of the 40 sites, 11 were reinvestigated, 15 could not be found and 14 are outside of the project area. Many of the 15 sites which could not be relocated have been permanently inundated by Lake Oahe. However, a number are located in areas along the present Lake Oahe shore. Although nothing was found at these locations during the 1986 inventory, it is possible that cultural materials at a number of these would have been exposed had the

Table 2. Results of South Dakota Archaeological Research Center documents search.

<u>Site Number</u>	<u>Description</u>	<u>Status</u>	<u>Site Type</u>	<u>Temporal Affiliation</u>	<u>Recorder</u>
39C014,54	Davis or Lower Grand site	Intact but out-side project area	Earthlodge village	Extended Coalescent	1,2
39C017	Bellsman Creek Village	Inundated	Earthlodge village	Plains Village	1,2
39C018,42	Larson's Ferry Village(?)	Nothing found at this location	Earthlodge village	Plains Village	1,2
39C019,20,43	Potts Village	Located, see Volume 1-2	Earthlodge village	Extended Coalescent	1,2
39C020	see 39C019				
39C023	see 39C0210				
39C042	see 39C018				
39C043	see 39C019				
39C054	see 39C014				
39C078	H & H site	Intact but out-side	Earthlodge village(?)	Extended Coalescent	6
39C0201	Timber Creek site	Inundated/destroyed	Habitation	Extended Middle Missouri	2
39C0202	Small village	Located, see Volume 1-2	Earthlodge village	Plains Village	2
39C0203	Small village	Nothing found at this location	Earthlodge village	Plains Village	2

Table 2. Continued.

<u>Site Number</u>	<u>Description</u>	<u>Status</u>	<u>Site Type</u>	<u>Temporal Affiliation</u>	<u>Recorder</u>
39C0212	Small village	Nothing found at this location	Earthlodge village	Extended Middle Missouri	2
39C0213	Travis 1 site	Outside	Earthlodge village	Extended Coalescent & Extended Middle Missouri	1,2,3
39C0214	Artifact scatter	Outside	Artifact scatter(?)	Extended Coalescent	4
39C0215	Artifact scatter	Outside	Artifact scatter	Unknown prehistoric	4
39DW1	Moreau River Village	Located, see Volume 1-2	Earthlodge village	Extended Coalescent	1,2,4
39DW11,234	see 39DW234	Located, see Volume 1-2	Artifact scatter/depression	Prehistoric/Historic	4,7
39DW26,35	Three Horse Site	Outside	Depressions	Unknown	3
39DW51	2 depressions	Outside	Depressions, artifact scatter	Historic	5
39DW57	Depression, artifact scatter	Outside	Artifact scatter	Plains Village	5
39DW59	Artifact scatter	Outside	Earthlodge village	Extended Coalescent, Extended Middle Missouri	2
39DW224	Large village	Outside			

Table 2. Continued.

<u>Site Number</u>	<u>Description</u>	<u>Status</u>	<u>Site Type</u>	<u>Temporal Affiliation</u>	<u>Recorder</u>
39DW225	Large village	Outside	Earthlodge village	Plains Village	2
39DW226	Large village	Outside	Earthlodge village	Plains Village	2
39DW227	Small village	Inundated	Earthlodge	Plains Village	2
39DW228	Small village	Inundated	Earthlodge village	Extended Coalescent	2
39DW229	Small village	Inundated	Earthlodge village	Coalescent(?)	2
39DW230	Fox Island village	Located, see Volume 1-2	Earthlodge village	Extended Coalescent	2
39DW231	Calamity Village	Inundated	Earthlodge village	Extended Middle Missouri	2
39DW232	Small Village	Inundated at 1614' See Volume 1 39DW256	Earthlodge village	Extended Middle Missouri	2
39DW233	Swift Bird	Located, see Volume 1-2	Mounds	Plains Woodland	2
39DW234	Molstad Village	Located, see Volume 1-2	Earthlodge village	Extended Coalescent	1,2
39DW235	Scattered village	Heavy vegetation on Corps land artifacts found on private	Earthlodge village	Extended Coalescent	1,2

Table 2. Continued.

<u>Site Number</u>	<u>Description</u>	<u>Status</u>	<u>Site Type</u>	<u>Temporal Affiliation</u>	<u>Recorder</u>
39DW236	Large scattered village	Located, see Volume 1-2	Earthlodge village	Extended Coalescent	2
39DW240	Grover Hand mounds	Located, see Volume 1-2	Mounds	Plains Woodland	2
39DW241	White Eyes Village	Inundated	Earthlodge village	Plains Village	2
39DW242	Stelzer site	Located, see Volume 1-2	Occupation	Plains Woodland	2
39DW252	Arpan mounds	Inundated at 1610'	Mounds	Plains Woodland	2
39DW253	Small village	Inundated at 1610'	Earthlodge village	Plains Village	2
39DW254	1 Earthlodge depression	Inundated at 1610'	1 Earthlodge	Extended Coalescent	2
39DW255	3 Mounds	Outside	Mounds	Plains Woodland	2
39DW256	Mound	Located, see Volume 1-2	Mound	Plains Woodland	2

- 1 - W.H. Over (Sigstad and Sigstad 1973)
- 2 - Smithsonian Institution River Basin Surveys
- 3 - South Dakota Archaeological Research Center
- 4 - U.S. Army Corps of Engineers
- 5 - Augustana (Winham 1983)
- 6 - Larson-Tibesar Associates (Sanders et al. 1987)
- 7 - University of Nebraska-Lincoln (Falk and Pepper 1980)

Table 3. Status of previously recorded sites.

<u>Sites Investigated</u>	<u>Sites Not Found</u>	<u>Sites Outside Project Area</u>
39C019,20,43	39C017 - Inundated	39C014,54 - Partially Intact
39C0202	39C018,42 - Nothing found	39C078 - Intact
39DW1	39C0201 - Inundated	39C0213
39DW26,35	39C0203 - Nothing found	39C0214
39DW230	39C0210,23 - Inundated	39C0215
39DW233	39C0212 - Nothing found	39DW50
39DW234,11	39DW227 - Inundated	39DW51
39DW236	39DW228 - Inundated	39DW57
39DW240	39DW229 - Inundated	39DW59
39DW242	39DW231 - Inundated	39DW224
39DW256	39DW232 - Inundated (See Chap. Six - 39DW256)	39DW225
	39DW241 - Inundated	39DW226
11 sites	39DW252 - Inundated	39DW235 - No artifacts found on Corps land
	39DW253 - Inundated	39DW255
	39DW254 - Inundated	
	15 sites	14 sites

lake level been lower. This situation occurred during the 1985 inventory of Lake Oahe in Corson County (Sanders et al. 1987). The Demery Site (39C01), for example, was exposed at the 1605-1610 foot elevation but would be totally inundated above this level. As a result, the status of these sites presented in Tables 2 and 3 are based on the 1986 investigation of the site location at a time when relatively high lake levels occurred. As with the Demery site, their status could change given an investigation during lower lake levels.

Table 2 also provides information on the general site type and temporal affiliation. It is evident from the documents search that a wide variety of site types of differing periods of occupation are present within the vicinity of the project area. Most of the sites are Plains Villages recorded by W. H. Over of the Smithsonian Institution River Basin Surveys. Additional discussion of these and other adjacent sites is provided later in this section as well as in Chapters Three and Six.

Preliminary data sources concerning these sites included both published and unpublished materials as well as informant data. Key materials were the published listing and updates of the National Register of Historic Places, reports of the Smithsonian Institution, the reports at South Dakota Archaeological Research Center in Rapid City State Historical Preservation Center in Vermillion and the records of the South Dakota State Library, South Dakota State Archives and Robinson Museum of Pierre. Other unpublished reports, manuscripts, notes and maps were also obtained from the Omaha District, Corps of Engineers Office, the Corps Office in Pierre and the South Dakota Archaeological Research Center. The Midwest Archeological Center in Lincoln, Nebraska was also consulted concerning the disposition of certain unpublished manuscripts and other records. It was found that except for a few manuscripts, all other information has been turned over to the South Dakota Archaeological Research Center (Thomas Thiessen, personal communication 1987), but that the majority of these materials are in storage at the South Dakota State Penitentiary at Springfield (Patricia Hofer, personal communication 1987). Of particular concern was the disposition of the 1938 Department of Agriculture aerial photographs which clearly showed many of the earthlodge villages. A number of these were finally obtained from the National Archives and Records Administration, Washington, D.C. for use in determining original site extent.

Key informants were Mr. Timothy Nowak, South Dakota field archeologist for the Corps of Engineers and Mr. Marion Travis, a concerned and dedicated lay archeologist. Mr. Travis allowed us to view his collection of artifacts, notes, maps and aerial photographs of sites in the project area and surrounding area. He also provided valuable information on the condition of certain sites and at what pool elevation they would be visible. Mr. Travis' information is considered to be most valuable since it is cataloged using Smithsonian site numbers, a procedure which unfortunately, is not followed by other local collectors. Mr. J. J. Hoffman was also consulted concerning pertinent information involving 39DW233 and 39DW234.

The tribal chairmen of both the Standing Rock and Cheyenne River reservations and the Cheyenne River Sioux Cultural Center were contacted in person and by letter prior to the initiation of fieldwork and after its

completion. The letters requested information concerning "sites of historical value" within the project area. Examples of such sites given in the text of the letter were residences, communities, missions, sites of religious significance and schools. It was clearly stated in the letter that the project was a cultural resources inventory for the Corps of Engineers. Reasons given for obtaining the information included 1) identifying sites recorded during the 1986 survey; 2) identification and evaluation of previously unknown properties; and 3) the potential for protecting sites of historical value. To this date, no responses have been received.

Dwight Call, of the General Convention of Sioux YMCAs, Dupree, South Dakota was also contacted as a possible source of information pertaining to missions and other religious sites. Mr. Call was not aware of any YMCA missions within the project area, but was extremely helpful in other regards.

In addition to Marion Travis, Stanley LeBeau provided information concerning the location of a prehistoric village and possible mounds. The remains of the village were located and recorded as 39DW101. The mounds were reported as occurring on top of a bluff. No mounds were observed either at 39DW101 or on top of adjacent bluffs. It is possible that Mr. LeBeau was describing a natural, mound-like feature.

Archival historical research included consultation of published and unpublished sources about the Oahe region. Materials concerning Euroamerican and Indian settlement and chain of title searches were obtained from the Public Lands Records maintained by the U. S. Bureau of Land Management in Billings, Montana, Standing Rock Sioux Tribal offices in Fort Yates, North Dakota, and at the Corson County Register of Deeds Office at McIntosh, the Cheyenne River Sioux Tribal offices in Eagle Butte and the Dewey County Register of Deeds in Timber Lake, South Dakota.

In addition to the above information, a number of sources were checked in an attempt to identify individuals listed in the deed searches. The following sources were used: (Schell 1975; Lawson 1982a; Mattison 1953; Hall 1954; Milligan 1976; Bromert 1980). Information obtained from these sources was incorporated in the appropriate site descriptions (Chapters Six and Seven).

Preliminary information on historic site locations was provided by General Land Office (GLO) plats. Table 4 is a listing of these potential site locations and their status. In addition, Mattison (1953 survey of Lake Oahe) was consulted for additional site locales. Mattison's map (1953:199) shows four sites in the vicinity of the project area: Lewis and Clark campsite of October 7, 1804 (inundated), Sakakawea Monument (outside), Moreau Community Center (inundated), and Ascension Church (outside). From this map it is obvious that Mattison did not proceed up the Moreau River since the town of Promise and various churches and cemeteries are not included which do, however, show up on the 1947 Corps of Engineers topographic maps. The latter maps were used extensively to determine if the depressions and other historic materials located during the inventory were associated with former houses or farmsteads. This information is included within the pertinent site descriptions (see Chapters Six and Seven).

Table 4. List of historic site from General Land Office plats.

<u>Description</u>	<u>GLO Plat date</u>	<u>Status</u>
Structure	1898	see L/T 1186-12
Structure	1898	Inundated
N. Duchion	1898	Inundated
Alex Landrier	1898	Inundated
Structures	1898	Inundated
Peter La Beau	1898 1898	Inundated Inundated
Abraham Takes the Bull	1898	Inundated
Structures	1898 1898	Inundated Inundated
Structure	1898	Inundated
Structure	1898	Nothing found inundated
Structure	1898	Inundated
Chas. La Plant	1898	Nothing found inundated
House	1898	Inundated
Structure	1898	Inundated
Church	1898	Outside
Structure	1898	Nothing found at this location
Structure	1898	Inundated
2 structures	1898	Inundated
Structure	1898	Inundated
Structure	1898	Inundated
Structure	1898	Inundated

Table 4. Continued.

<u>Description</u>	<u>GLO Plat date</u>	<u>Status</u>
Structure	1901	Inundated
Structure	1901	Inundated
Structure	1901	Nothing found, probably inundated
Louis La Comple (sic)	1901	Inundated
Structure	1901	Inundated
Louis La Mont	1901	Inundated
Structure	1901	Inundated
Structure	1901	Outside

History of Archeological Investigations

The Middle Missouri subarea and project area specifically have been the subject of intensive archeological investigations since the early 1900s. W. H. Over with the University of South Dakota Museum initially investigated many of the major sites within South Dakota and along the Missouri River in particular (see Sigstad and Sigstad 1973). Table 2 lists those sites within the vicinity of the project area visited by Over. Those occurring within the project area and still intact include the Potts (39C019), Moreau River (39DW1) and Molstad (39DW234) villages.

During this same time, George F. Will and Thaddeus C. Hecker were also investigating archeological sites along the Missouri River. While most of their work concerned sites in North Dakota, they also visited a number of sites in northern South Dakota. Will's initial report (1924) tabulated a number of sites occurring in the area of the Grand and Moreau Rivers, using the accounts of Lewis and Clark and the 1898 Missouri River Commission topographic maps. Two of the sites occurring within the project area are Molstad Village and a "village of sixty lodges on the west bank of the Missouri and south bank of Moreau River" (Will 1924:310). Two villages (39DW216 and 39DW217) in this general area, were recorded by the Smithsonian Institution River Basin Surveys, however, these sites have since been inundated.

The work of Will and Hecker was summarized in a report (1944) which expanded Will's (1924) earlier report by providing one of the first taxonomies based on cultural remains (Larson et al. 1983:99). W. Duncan Strong also utilized Will's (1924) report, information gathered from W. H. Over and Russell Reid with the Missouri River Historical Society of North Dakota, as well as his own archeological investigations along the Missouri River in North and South Dakota as the basis for his famous work "From History to Prehistory in the Northern Great Plains" (Strong 1940). Like Will and Hecker (1944), Strong attempted to associate the cultural remains from various villages along the Missouri River to the local historic Native American tribes: Mandan, Hidatsa, Arikara and Cheyenne. Lehmer (1971:36) notes:

The earliest reports on work in the Middle Missouri subarea were largely factual, and showed little concern with synthesizing the available data. This situation changed considerably during the 1930's. William Duncan Strong excavated in the vicinity of Mobridge in 1932 and at several sites in North and South Dakota in 1938. He also sponsored an excavation party, directed by Albert C. Spaulding, which worked in South Dakota in 1939. Strong's summary (1940) is a landmark in the growth of the understanding of Middle Missouri archeology. He recognized three periods or stages -- Historic, Protohistoric and Prehistoric. Prehistoric materials in the Missouri Valley were equated with the Upper Republican culture in Nebraska. This was done on the basis of Spaulding's work at the Arzberger Site (39HU6) near Pierre.

The intensity of archeological investigations increased tremendously as a result of the passage of the Pick-Sloan plan and the construction of massive dams along the Missouri River (Larson et al. 1983:100). Archeological inventories of the project area were conducted from 1946 to 1962 most notably by Paul Cooper, R.C. Farrell, J.J. Hoffman, J.J. Bauxar,

R.C. Stephenson and Ray Mattison with the Smithsonian Institution River Basin Surveys. Within the project area, these inventories basically resulted in the assignment of a Smithsonian trinomial to the sites observed by Over (Sigstad and Sigstad 1973) and Will and Hecker (1944) with some of the sites later receiving major excavation. Table 2 lists the sites recorded by the Smithsonian Institution River Basin Surveys.

The major archeological impact of the River Basin Surveys was the identification of archeological sites in imminent danger of inundation which spurred a program of salvage excavation. Excavations within the project area are listed below in Table 5.

Table 5: List of sites within the project area excavated by the Smithsonian Institution River Basin Surveys.

<u>Site</u>	<u>Excavation</u>	<u>Year</u>	<u>Report</u>
39C019	R.L. Stephenson	1961	Stephenson (1971)
39DW1	Oscar Mallory	1963	None
39DW230	Oscar Mallory	1963	None
39DW231	Oscar Mallory	1963-1964	None
39DW233	R.W. Newman	1960, 1962	Neuman (1975), Hoffman (1963)
39DW234	J.J. Hoffman	1962	Hoffman (1967)
39DW240	R.W. Newman	1962-1963	Neuman (1975)
39DW242	R.W. Newman	1962-1964	Neuman (1975)
39DW252	R.W. Newman	1965	Neuman (1975)

The information obtained from these and other investigations led to Donald J. Lehmer's (1971) synthesis of the history and prehistory of the Middle Missouri subarea. It is quite evident that Lehmer's (1971) book reflects the focus of the previous archeological investigations on the large, highly visible earthlodge village sites as little mention is provided on the Plains Woodland or preceramic periods. The Plains Village period is extensively discussed, divided between the Coalescent and Middle Missouri traditions. The temporal affiliation of sites obtained from the documents search are listed in Table 2. Additional information concerning these temporal affiliations is presented in Chapter Three.

After the termination of the Smithsonian Institution River Basin Surveys in 1969, few archeological investigations have recently been conducted within the project area. These have been primarily restricted to brief large-scale summaries (e.g., Jensen 1965 and Adamczyk 1975) or small inventories of boat ramps or irrigation pipelines (Boyd 1979; Haberman 1978, 1983, 1984; and Winham and Butterbrodt 1983). Boyd's (1979) inventory recorded 39DW35 and is the only one of the investigations cited above that occurs within the project area. She recorded 39DW35, a very small scatter of human bone and flakes. The University of Nebraska-Lincoln conducted additional survey and test excavations at this site in 1979 (Falk and Pepperl 1980). They found the site to contain an eroded human burial with a lanceolate projectile point (Late Paleoindian/Plains Archaic?) and a historic occupation consisting of three depressions. Falk and Pepperl (1980) considered the site not eligible for nomination to the National

Register of Historic Places. The U.S. Army Corps of Engineers also conducted test excavations at 39DW1 in 1986 which is discussed in Chapter Six.

In terms of the adequacy of these previous investigations, the discussion presented by Sanders et al. (1987: 9-10) is equally appropriate:

The adequacy of these previous investigations must be viewed in terms of the context of the specific investigation and their overall goals or intent. The early investigations by W.H. Over (Sigstad and Sigstad 1973) and Will and Hecker (1944) primarily documented the existence of Plains Villages within the project area. The later Smithsonian Institution River Basin Surveys basically spot checked these locations. The major problem with these early investigations is the apparent lack of adequate maps, legal locations and site descriptions which has resulted in assigning of different site names and numbers to the same cultural manifestation....

From the list of previously recorded sites it is also evident that earthlodge villages, associated cemeteries and historic forts were the primary focus of the investigations by Over (Sigstad and Sigstad 1973), Will and Hecker (1944) and the Smithsonian Institution River Basin Surveys. As a result, it is not too surprising that the new sites recorded during the present project are primarily non-earthlodge village sites. It should also not be surprising that information is quite deficient concerning the function and relationships of these latter sites to the overall prehistory of the Middle Missouri subarea. Information concerning these sites as well as more detailed analyses of the artifact assemblages and chronological relationships of the earthlodge villages has, therefore, formed the focus of research questions pertinent to the area (Buechler 1984).

In general, it can be stated that earlier inventories were adequate in their success in locating and identifying large, highly visible sites (i.e. primarily earthlodge villages). However, it is also quite evident that these sites represent only a small portion of the prehistoric occupation of the area and that further investigation of these non-earthlodge village sites will be the ones which will round-out our knowledge of the region's prehistory. It should be noted that without the intensive investigations of the earthlodge villages along the Missouri River, it would not have been possible to identify those gaps in our knowledge.

Concerning the adequacy of the Smithsonian Institution River Basin Survey historical inventory, there is an obvious difference in the type of sites recorded by Mattison (1953) and the sites recorded by Larson-Tibesar Associates in 1986 (see Chapter Seven). Mattison's emphasis was on sites he considered individually or collectively to be of major historical importance. Of the 149 sites or features Mattison (1953:11) recorded for the entire Lake Oahe area, only four sites were identified as being of major historical importance on their own merit. These sites are the

Ashley-Leavenworth Battlefield, Fort Manuel, Fort Sully and Fort Bennett (Mattison 1953:11). None of these sites are in the project area. The other 145 sites were considered of major historical importance only as a group (Mattison 1953:11). This group would include the four sites described as within or immediately adjacent to the project area.

This bias basically reflects our understanding of what comprises a significant property which has shifted radically since Mattison's and other earlier archeologists evaluations were completed. Two points which are believed to be critical to this shift are discussed here. The first and perhaps most important has been a shift in the interpretation of who makes history. While the "great man" framework is still popularly used to simplify the explanation of historical process, it is widely understood that history is something that everyone experiences and contributes to, regardless of their status (Deloria 1982:xvi-xvii). The second pertains to our understanding of what makes a significant property. As stated by the National Park Service (1982:1):

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. that are associated with events that have a significant contribution to the broad patterns of our history; or
- B. that are associated with the lives of persons significant in our past; or
- C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. that have yielded or may be likely to yield, information important in prehistory or history.

Perhaps the most important criterion for evaluating the 18 historic sites recorded in 1986 is criteria B and D. Criterion D is generally invoked for prehistoric sites however, it can also be stated that very little has been recorded about the lifeways of individuals who were confined to the reservations in South Dakota in the nineteenth century. Therefore, the physical remains of the habitations of individuals who may or may not have been significant in the history of the reservation assume importance in their own right for their ability to provide and/or enhance our understanding of reservation lifeways.

CHAPTER TWO ENVIRONMENTAL SETTING

Keith H. Dueholm and Paul H. Sanders

Introduction

Portions of this chapter have been adapted from Sanders et al. (1987) due to the extreme similarity of the two project areas, both physiographically and culturally. The project area of this investigation is along the western margin of the Missouri River Valley between the Grand and Moreau rivers. This area generally includes river terraces, glaciated areas, unglaciated bluffs and hills and river bottoms not inundated by Lake Oahe. Physiographically, this area is within the Great Plains province (Fenneman 1931). Culturally, it is a part of the Middle Missouri subarea (Lehmer 1971) encompassing the Grand-Moreau region.

Physiography, Geology and Soils

The Missouri Valley is a geologically recent feature. Glaciations during the Pleistocene blocked the eastward flowing rivers causing new channels to become incised within the bedrock (Flint 1955). The present Missouri River Valley was one of the last channels to become incised into the relatively soft underlying Upper Cretaceous-age Pierre Formation shales and Fox Hills Formation sand, silts and clays. The east side of the valley is comprised of gently rolling hills of glacial drift which for the most part cover the underlying bedrock. West of the river unglaciated hills, such as Rattlesnake Butte, to the north, overlook a sequence of terraces, dissected breaks and dendritic permanent and ephemeral drainage valleys. The geoarcheological investigation presented later in this report provides additional details concerning these landforms.

The Missouri Valley ranges between 2-5 miles wide and up to 100 m deep while the former floodplain varied between 1-2.5 miles in width. The tributary valleys vary considerably in width and depth with the Grand and Moreau rivers being the largest.

Soils also vary and are generally dependent upon the underlying bedrock or parent material. Areas with exposed bedrock have characteristically shallow clay-rich soils and minimal vegetation cover. This is particularly true of the uplands surrounding the Moreau River valley. In contrast, extensive loess which may be related to the Oahe Formation (Clayton et al. 1976) are rich in minerals and consequently support dense vegetation. Additional information concerning the soils and vegetation are presented later in this section as well as Chapter Eight.

Climate

This area has been characterized by Bailey (1926) as an Upper Sonoran life zone. The climate is therefore semiarid with a mean annual precipitation of 45.5 cm (17.9 in) with temperatures varying from a low of -33°F in winter to high of 113°F in summer as recorded at Pierre, South Dakota (see Borchers 1980).

Climatic conditions also vary from year to year. During the summer of 1983, for example, Winham and Lueck (1984) reported temperatures exceeding 100° nearly every day along Lake Francis Case. In contrast, during the last half of the 1986 investigation, for the present project, the weather was cool and moist. Climatic conditions during the past 10,000 years have also varied considerably. Antevs (1948, 1955) defined three post-glacial climatic periods: the Anathermal (ca. 7,000-5,500 years B.C.), the Altithermal (ca. 5,500-2,500 years B.C.) and the Medithermal (ca. 2,500 years B.C. to present). Conditions during the Anathermal are considered to have been cooler and moister than present while the Altithermal was warmer and drier than present. The Medithermal is generally believed to be a climatic period similar to present conditions with occasional fluctuations.

Cultural responses within the Middle Missouri to the Anathermal and Altithermal are not well known due to the paucity of archeological data. More information is available for the latter portion of the Medithermal when the region was occupied by Plains Village groups. Lehmer (1970:117) observed:

The close correspondence between the dates of certain widespread climatic episodes defined by Reid A. Bryson and others and a sequence of episodes in the history of the native cultures of the Missouri Valley in the Dakotas suggest a close correlation between climatic and cultural changes. The beginning of Bryson's Neo-Atlantic episode, when influxes of moist tropical air produced favorable conditions for corn agriculture, correlates with the first appearance of horticulture villages in South Dakota around A.D. 900. The Pacific I episode, beginning around A.D. 1250, was a time of lowered temperatures and decreased precipitation, and it correlates with a drastic reduction in the extent of the occupation of the area by the village tribes. More favorable conditions during the Pacific I episode, which lasted from about A.D. 1450 to 1550, saw a marked increase in the number and geographic extent of occupied villages. The Neo-Boreal episode was a time of cool summers that began about the middle of the 16th century. Many of the villages occupied between A.D. 1550 and 1675 were small and temporary affairs, which suggest a marginal economy. Moderation of the Neo-Boreal conditions during the first half of the 18th century appears to be reflected in the development of larger and more permanent villages in South Dakota.

More recent variations include the "Dust Bowl" of the 1930s. Cultural responses during this period also saw the movement of peoples to different areas of the United States, indicating that human responses to climate appear to crosscut ethnic boundaries and technological differences.

Fauna

A wide variety of fauna occurs within the thick vegetation of the Missouri River bottoms as well as the neighboring short and tall grass prairies. Additional species are also known to have occurred within this area from early historic accounts and archeological excavations.

Species common to the area include white-tailed deer (Odocoileus virginianus), mule deer (O. hemionus), antelope (Antilocapra americana), white-tailed jack rabbits (Lepus townsendii), cottontail rabbits (Sylvilagus floridanus), coyotes (Canis latrans), red foxes (Vulpes vulpes), skunks (Mephitis mephitis) and a wide variety of rodents, birds and reptiles. Additional species are listed in Bailey (1926) whose work in neighboring North Dakota should be applicable to the present project area.

A number of large mammals, such as elk and bison, no longer occur in the area but were observed in vast numbers and utilized by early Euroamerican explorers and the indigenous Native Americans. The most important of these is the bison (Bison bison). The bison formed an integral part of the Native American's subsistence as evidenced by their abundant remains from excavated archeological sites along the Middle Missouri (see e.g., Lehmer 1971; Neuman 1975). In addition to bison, a number of other species have been obtained from archeological sites. Gilbert (1969:281-282) reports the presence of elk (Cervus canadensis), deer, antelope, dog (Canis spp.), swift fox (Vulpes velox), red fox, badger (Taxidea taxus), raccoon (Procyon lotor), skunk, ferret (Mustela spp.), beaver (Castor canadensis), rabbits, prairie dog Cynomys ludovicianus), wood rat (Neotoma spp.), Canadian goose (Branta canadensis), mallard (Anas platyrhynchos), whooping crane (Grus americana), sandhill crane (Grus canadensis), bald eagle (Haliaeetus leucocephalus), golden eagle (Aquila chrysaetos), hawk (Accipiter spp.), prairie chicken (Tympanuchus cupido), raven (Corvus corax), crow (Corvus brachyrhynchos) and downy woodpecker (Dendrocopus pubescens) from ten Plains Village and Plains Woodland sites. Bass et al. (1971:106) obtained hawk, eagle and black and grizzly bear claws (Ursus americanus and U. horribilus) from their excavation of the burial areas at the Leavenworth site (39C09). In addition to some of the species listed above, Ahler's (1977a) excavations at Jake White Bull (39C06), recovered the remains of gar (Lepisosteus sp.), minnows and carp (Hypobis spp.), white sucker (Catostomus commersoni) and catfish (Ictalurus spp.). Both of these latter sites occur to the north of the present project area. While the above list is not exhaustive, it does provide evidence of the wide range of species available for utilization by historic and prehistoric occupants of the area.

Vegetation

This region of South Dakota has been characterized by Daubenmire (1978) as the Bouteloua gracilis province, or by Bailey (1976) as the Great Plains Short-grass Prairie province. The adjacent area in North Dakota has been termed Mixed-grass Prairie (Kuchler 1975; Bailey 1980). Elements of the more eastern Tall-grass Prairie exist along moist slopes and in bottomlands by the Missouri River (i.e., the Andropogon scoparius province of Daubenmire 1978). The Northern Floodplain Forest (Populus-Salix-Ulmus)

also occurs along the Missouri River (Kuchler 1975).

Within this regional setting ten plant communities have been described for the adjacent area along the Missouri River in North Dakota (Larson et al. 1986), influenced by such factors as topography, aspect, and soil texture and moisture. These communities are probably typical of the present survey area and follow descriptions summarized from Larson et al. (1986). Nomenclature follows that of the Great Plains Flora Association (1977).

A Mixed-grass Prairie community occurs on level to rolling uplands, and is the most extensive type in the survey area. Dominant species are midgrasses such as needleandthread (Stipa comata), western wheatgrass (Agropyron smithii), junegrass (Koeleria pyramidata) and others. A lower stratum of shortgrasses or sedges is also normally present, including blue gramma (Bouteloua gracilis) and threadleaf sedge (Carex filifolia). Variations in soil texture affects the relative densities of the grass species (Aandahl 1972, 1982). Numerous forbs are present in Mixed-grass Prairie, but usually in low densities (Hanson and Whitman 1938; Redmann 1975). They include biscuitroot (Lomatium spp.), plains wild onion (Allium textile) and prairie turnip (Psoralea esculenta) early in the growing season and coneflower (Echinacea angustifolia), purple prairie clover (Petalostemon purpureum), blazing star (Liatris punctata), butterflyweed (Gaura coccinea) and silver scurfpea (Psoralea argophylla) later on.

Infrequent shaley or clay badlands of small areal extent are present in the survey area associated with the Upper Cretaceous Pierre Formation. The sparse vegetative cover of the Badland community consists of numerous species, many of which are not found elsewhere in the area. Grasses include western wheatgrass, saltgrass (Distichlis spicata) and foxtail barley (Hordeum jubatum) and some shrubs include long-leaf sage (Artemisia longifolia) and rabbitbrush (Chrysothamnus nauseosus). Characteristic forbs are silverscale (Atriplex spp.), goosefoot (Chenopodium spp.), seablite (Suaeda depressa) and wild buckwheat (Eriogonum spp.). Many of these are typical plants of saline areas further west.

An Andropogon scoparius community occurs on slopes of river and stream valleys, on steep slopes of upper terraces and on slopes of intermittent drainages. This community most often occurs on south-facing slopes. The community is primarily composed of a high proportion of Tall-grass Prairie species associated with members of the Mixed-grass Prairie. Needleandthread, side-oats gramma (Bouteloua curtipendula) and stonehills muhly (Muhlenbergia cuspidata) are typical mid-grasses, while little bluestem (Andropogon scoparius) is the characteristic tall grass. Other tall grasses such as sandhills bluestem (A. hallii) and sandreed (Calamovilfa longifolia) are prevalent on sandier sites, while big bluestem (A. gerardii) is an important component on lower slopes. Important, and often showy forbs include stiff sunflower (Helianthus rigidus), prairie smoke (Geum triflorum), gaillardia (Gaillardia aristata), coneflowers (Echinacea angustifolia and Ratibida columnifera) and prairie turnip.

The deep, narrow ephemeral stream valleys cut through bedrock terraces and the valley slopes (mostly north-facing) of tributary streams of the Missouri River often have a Hardwood Draw community. It is characterized by open to relatively dense stands of bur oak (Quercus macrocarpa) and

other deciduous trees such as green ash (Fraxinus pennsylvanica), box elder (Acer negundo) and American elm (Ulmus americana). A variety of shrubs occur in this community which are normally most abundant along the margins of the community or in more open situations. Some of the typical shrubs are buffaloberry (Shepherdia argentea), currant (Ribes americanum and others), chokecherry (Prunus virginiana), wild plum (P. americana) and juneberry (Amelanchier alnifolia). Woody vines such as wild grape (Vitis spp.) can also be present. Mesophytic forbs often occur here, including Canada violet (Viola canadensis), false Solomons's seal (Smilacina stellata) and wild strawberry (Fragaria spp.). In many situations this community is adjacent to the Andropogon scoparius Prairie community, and may merge into it where trees are not particularly dense.

The two lowest alluvial terraces within the Missouri River Valley support floodplain forest and numerous other plant communities. While the impoundment of Lake Oahe has eliminated much of these, they are still present in the Grand and Moreau river valleys.

Several nonforest communities are present on the terraces, often associated with old channels or backwaters of the Missouri River. Sand dunes and sandbars are found adjacent to the river channel, supporting the sparsely vegetated Sand Dune community. It contains scattered sedges (Carex spp.) and horsetails (Equisetum spp.) and may be stabilized by cottonwood (Populus deltoides) saplings, willows (Salix spp.), sandreed, Indian ricegrass (Oryzopsis hymenoides) and lemon scurfpea (Psoralea lanceolata). Wetter areas of dunes and sandbars may also contain semiaquatic plants such as bulrush (Scirpus spp.), rush (Juncus spp.), and marsh cress (Rorippa spp.) and other forbs (Johnson et al. 1976; Keammerer et al. 1975). In North Dakota this community is normally small in individual occurrence, but may range up to 10 hectares in extent (Johnson et al. 1976).

Old channels of the Missouri and Moreau rivers, and elsewhere in quiet water, contain or would have contained a Marsh community, mostly in water less than six feet (1.9 meters) deep. It is usually dominated by cattails (Typha spp.) associated with emergent hydrophytes such as bulrush, giant reed (Phragmites australis), reed canarygrass (Phalaris arundinacea) and the forbs water plantain (Alisma spp.) and arrowleaf (Sagittaria spp.). Marshes are relatively frequent and large in extent in the valley.

Marshes merge into a Wet Meadow community on their drier upland side. This is dominated by tall graminoids such as sedges, spikerushes (Eleocharis spp.), reedgrass (Calamagrostis inexpansa), mannagrass (Glyceria spp.), reed canarygrass and prairie cordgrass (Spartina pectinata) which form a dense vegetative cover. Forbs in this community include iris (Iris missouriensis), giant goldenrod (Solidago gigantea), Jerusalem artichoke (Helianthus tuberosus), field mint (Mentha arvensis), docks (Rumex spp.) and wild licorice (Glycyrrhiza lepidota). Wet meadows extend along tributary streams and may also occur in moist, open bottoms of draws in upper terraces.

In water deeper than six feet (1.9 meters) a Lacustrine community of submerged aquatics occurs. Plants such as pondweed (Potamogeton spp.), coontail (Ceratophyllum demersum) and horned pondweed (Zannichellia palustris) form a loosely knit community which may also contain algae, and

the floating-leaved aquatic, yellow water lily (Nuphar luteum). Many of these species may also occur in deeper parts of the Marsh community.

The vegetation with the largest extent on the lower two alluvial floodplain terraces is, or was, the floodplain forest. This may be divided into two communities. A Cottonwood Forest community occurs on sandy soil, generally nearer the main channel, on the lower of the two alluvial terraces. Young forests contain many small cottonwood trees. Older forests have tall, widely spaced trees and contain numerous tall shrubs, saplings and herbs (Johnson et al. 1976). Shrubs include chokecherry, buffaloberry, redosier dogwood (Cornus stolonifera), poison ivy (Rhus radicans) and junberry. Herbs include field mint, bergamot (Monarda fistulosa) and wild licorice. Older forests may be more open and xeric and contain numerous prairie grasses and forbs (Keammerer et al. 1975). Such a situation may be segregated, if desired, as a savannah-type variant of the Andropogon scoparius Prairie community, but is here considered a part of the Cottonwood Forest. Big bluestem, Jerusalem artichoke, ground cherry (Physalis heterophylla) and giant hyssop (Agastache foeniculaceum) are some typical plants of these open forests.

The higher alluvial floodplain terrace, which usually contains silty or clay soils, supports a Mesic Forest community. A relatively closed overstory canopy is provided by green ash, box elder, American elm and bur oak and thus lacks the tall shrub and sapling layer found in the Cottonwood Forest, although arrowwood (Viburnum lentago) may be locally abundant. Lianas or woody vines are more common than in the preceding community. These include poison ivy, woodbine (Parthemocissus inserta), foxgrape (Vitis vulpina), bittersweet (Celastrus scandens) and Virgin's bower (Clematis ligusticifolia) (Keammerer et al. 1975; Johnson et al. 1976). Forbs in this community include hog peanut (Amphicarpa bracteata), Indian hemp (Apocynum spp.) and field mint. Perhaps due to the lack of a shrub layer these may attain local abundance.

Most of the plant communities are, or have been, subjected to various grazing intensities with differential effects. For instance, heavy grazing in Mixed-grass Prairie and Andropogon scoparius Prairie tends to decrease the relative importance of mid- or tall-grasses while increasing that of short-grasses or may be a factor in aiding establishment of noxious weeds such as leafy spurge (Euphorbia podperae) (Larson et al. 1986). Moderate grazing, however, may contribute to increased productivity by tall-grasses. In Wet Meadows heavy grazing often promotes the replacement of native grasses by such introduced ones as Kentucky bluegrass (Poa pratensis), quackgrass (Agropyron repens) (Keammerer et al. 1975) or redtop (Agrostis stolonifera). This is the usual situation in the bottoms of draws where cattle become concentrated in a small area resulting in heightened grazing intensity.

Floodplain forests subjected to heavy grazing often display a proliferation of shrubs, especially Wood's rose (Rosa woodsii), buckbrush (Symphoricarpos occidentalis) and the introduced fly honeysuckle (Lonicera tatarica) (Johnson et al. 1976). Such a Brushland Grazing Disclimax community can result from openings created by timber removal. The tangle of shrubs formed by Wood's rose can be nearly impenetrable.

Another influence which probably affects some communities is fire suppression. Natural or Indian set fires were probably important in maintaining the integrity and vitality of the Andropogon scoparius Prairie community. Frequent prairie fires may have also reduced the size of individual Hardwood Draw communities or favored the formation of shrubby scrub oak since bur oak forms stump sprouts if the main trunk is killed by fire. Fire may also have promoted higher densities of shrubs in Hardwood Draws by opening up the canopy.

CHAPTER THREE PREHISTORIC AND HISTORIC NATIVE AMERICAN CULTURE HISTORY

Paul H. Sanders

Introduction

The following section is a brief description of the culture history of the project area and is intended to provide a framework to which previously unrecorded sites can be compared. Segments of this chapter have been adapted from Sanders et al. (1987) due to the similar prehistoric and historic backgrounds of the respective project areas. Since the project area is limited geographically, it is necessary to describe the area's prehistory in terms of a larger, regional scope. Regional overviews which include the present project area are Lehmer (1971), Wedel (1961), Zimmerman and Stewart (1981) and Zimmerman (1985). Figure 2 presents a condensation of salient aspects of these chronologies with major periods discussed below.

Paleoindian Period (ca. 9500-5500 years B.C.)

This period contains the earliest documented evidence of human occupation on the Plains. This period is normally defined on the presence of finely-made lanceolate projectile points and extinct Pleistocene fauna. Sites attributable to this period are extremely rare in both North and South Dakota. While no documented Paleoindian sites occur within the present project area, some of the best Paleoindian sites within the Middle Missouri subarea occur nearby. Travis 2 (39WW15) and Walth Bay (39WW203) occur on the east bank of the Missouri River south of Mobridge. Both sites represent temporary occupations which date at approximately 5000-6000 B.C. based on temporally diagnostic artifacts from Travis 2 and Walth Bay and two radiocarbon dates from Walth Bay (Ahler et al. 1974, 1977).

In addition to these two sites, an apparently isolated Folsom point (ca. 8500-9000 B.C.) was recovered from the beach of Lake Oahe near the confluence of Oak Creek and the Grand River (Travis and Haberman 1983). An isolated late Paleoindian stemmed projectile point (39C0113) was also recovered from this same general area (Sanders et al. 1987). Marion Travis also located an apparent Agate Basin or other late Paleoindian lanceolate projectile point on the beach near Potts Village (39C019). A possible late Paleoindian or Plains Archaic "elongate bifacial form" and associated human remains were recovered at 39DW35, near the town of Moreau and within the project area by Falk and Pepperl (1980). The characteristics of the human remains and bifacial artifact are the basis for the temporal assignment (see Chapter Six for additional discussion).

From these sites, it is evident that the area was utilized, at least minimally during the late Paleoindian period. Substantial campsites or kill sites have yet to be located anywhere in the Middle Missouri subarea despite the long history of archeological investigation and local amateur

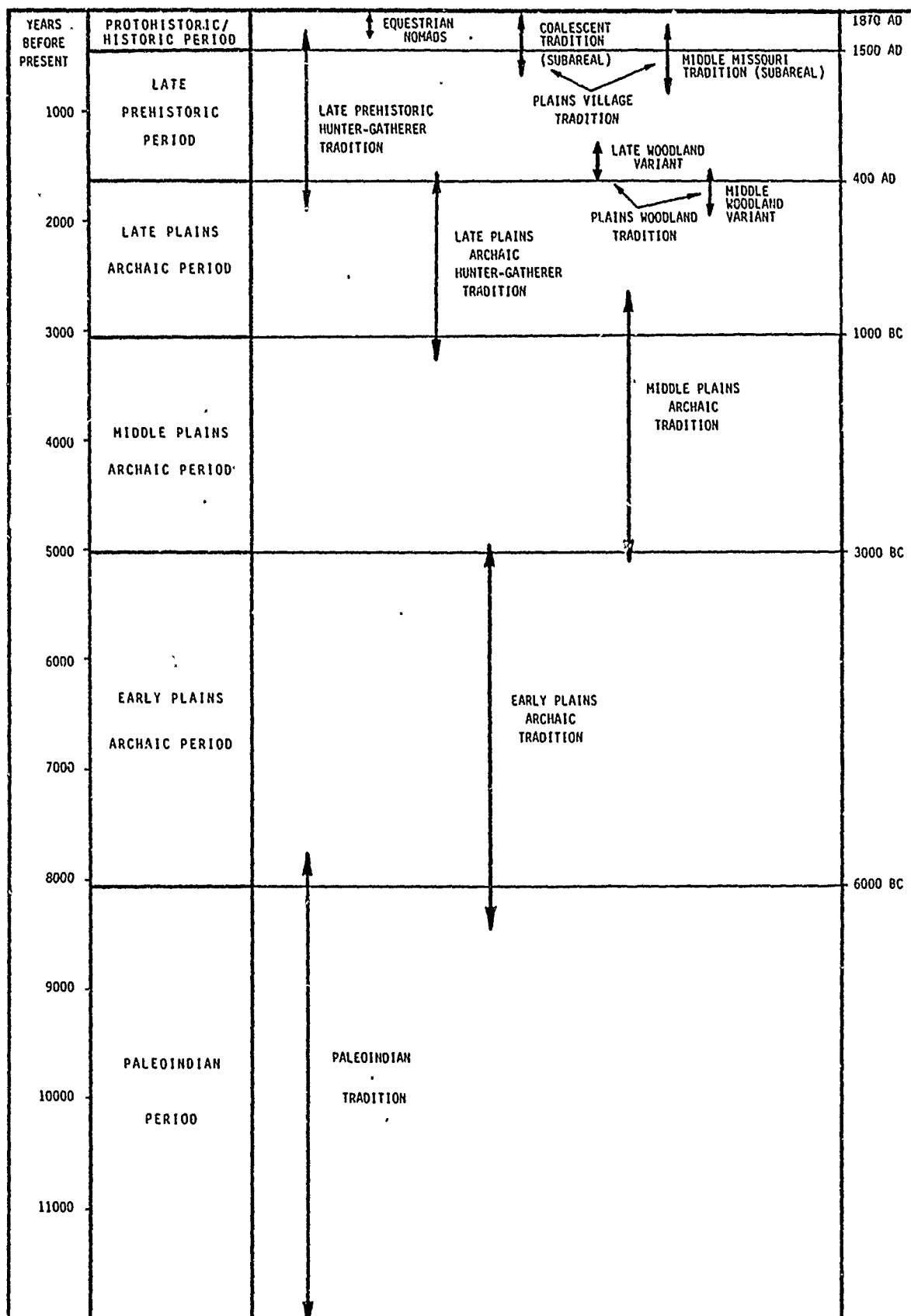


Figure 2. Project area cultural chronology.

collecting. When the latter are weighed together with the fact that cutbanks were and are continually being exposed would lead one to suspect that some factor other than site visibility or depth of burial (see e.g., Henning 1981; Bradley 1981; Larson et al. 1983; or Toom and Artz 1985) is responsible for the lack of Paleoindian or preceramic sites.

Plains Archaic Period (ca. 6000 B.C. - A.D. 400)

This period is also poorly represented in the project area and most of South Dakota as well. Archeological evidence from areas adjacent to the state, primarily from the Northwestern Plains indicate that prehistoric subsistence was geared towards the utilization of a wide range of food resources. Utilization of plant remains is also inferred from the higher frequency of grinding implements (Frison 1978; Zimmerman 1985).

Buechler (1984), Frison (1978), Hannus (1982) and others have divided this period into Early, Middle and Late Plains Archaic periods primarily on the basis of stylistic changes in key projectile point types.

A number of sites from the Early Plains Archaic period (ca. 6000-3000 years B.C.) have been recorded from areas immediately adjacent to the project area. These include components at Travis 2 (Ahler et al. 1977), Walth Bay (Ahler et al. 1974), and 39WW43 (Winham 1983). The latter site consisted of surface artifacts and a buried bison bone which yielded a radiometric date of 7120 ± 360 before present (Winham 1983:71). An apparent Early Plains Archaic isolated projectile point (39C0114) was also located north of Mobridge during an adjacent inventory of Lake Oahe (Sanders et al. 1987:148).

The most notable archeological complex occurring during the Middle Plains Archaic period (ca. 3000-500 years B.C.) is the McKean Complex. Most of the McKean sites within South Dakota have been found in the western part of the state, especially around the Black Hills, where the initial "type" sites of Mulloy (1954) and Wheeler (n.d.) are located. This complex contains a wide variety of lanceolate to stemmed and notched projectile points which form a discrete archeological manifestation compared to earlier and later period projectile points but nonetheless exhibit a wide range of internal variation. Controversies over the "meaning" of this variation in projectile point types has not yet been resolved (see Mulloy 1954; Wheeler 1952, 1954, and 1985; Tratebas 1981). Todd and Kornfeld (1985:2) have noted that:

While the questions of differences in projectile point morphology that are at the heart of the McKean typological debates are important, the significance of the confusing array of morphological variability may be that it is symptomatic of broader cultural processes in need of understanding. The difficulties that have arisen over the last three decades of Middle Plains Archaic research may point to lack of fit between interpretative concepts and the nature of the archaeological record.

Within the Missouri Trench, McKean Complex projectile points have been described by Neuman (1964) for a number of sites in the Big Bend region,

including Medicine Crow (39BF2), Sitting Crow (39BF225), and McBride (39BF270). Travis 2 (Ahler et al. 1977) and Walth Bay (Ahler et al. 1974) also contain McKean points. To the north of the project area a large, diffuse site (39C0103) containing a lanceolate McKean point, situated on a high bluff along the Grand River was located during the 1985 Lake Oahe inventory (Sanders et al. 1987).

During the Late Plains Archaic period (ca. 1000 B.C.-A.D. 400), distinctive corner-notched projectile points referred to as Pelican Lake replaced the McKean complex variants. Nowak et al. (1982:25.11) noted that overall few Pelican Lake sites have been found in South Dakota and have been mainly found in areas around the Black Hills (Haug 1976) and recently in the northeastern part of the state as a result of the recent Northern Border Pipeline project (Hannus 1982).

Two Pelican lake projectile points were located during the 1985 Lake Oahe inventory (Sanders et al. 1987). One was found at 39C010, a small Extended Coalescent village while the other was an isolated find (39C011). These sites and the others noted above suggest a continuation of a temporary occupation and utilization of the Middle Missouri subarea. It is not until the transition from the Late Archaic to Late Prehistoric periods that a dramatic increase in archeological sites can be documented.

Late Prehistoric Period (ca. A.D. 1-1500)

This period is composed primarily of the Plains Woodland and Plains Village traditions and is marked by the presence of ceramics, various small side and corner-notched projectile points, burial mounds and eventually earthlodge villages. This time period reflects an increase in horticulture, cultural complexity and evidence of an intense utilization of the Middle Missouri subarea.

The Plains Woodland Tradition generally occurred from about A.D. 1 to 900 and is comprised of the Middle and Late Woodland variants. The Middle Woodland variant (ca. A.D. 1-600) is manifested within the present project area by the Sonota Complex (Neuman 1975). The project area is essentially the center of the Sonota Complex with sites composed primarily of the burial mounds at Swift Bird (39DW233), Grover Hand (39DW240), and Arpan Mounds (39DW252) and an associated campsite at Stelzer (39DW242) excavated by Neuman (1975) in 1962-1964. These sites include large quantities of bison bone, lesser quantities of other mammal bones, bone tools, shell, ceramics, various chipped and ground stone tools and large side-notched projectile points commonly referred to as "Besant". Lehmer (1971:62) notes:

While the material culture of the Woodland sites is far less elaborate than that of the later villages, the burial mounds do imply a fairly high development of socioceremonial organization. The Woodland people were obviously able to coordinate the work of the individuals involved in mound building, and to provide food for the workers while they were diverted from their own subsistence activities.

It is my impression that the Woodland cultures of the Middle

Missouri were somewhat better adapted to the Plains environment than those of the Central Plains. The relatively high proportion of refuse bone of bison and the frequent occurrence of bison skulls and other bones at the base of burial mounds, in presumably ritual context, suggest that the Middle Missouri Woodland people had developed the techniques of hunting bison on the uplands far beyond their contemporaries in the Central Plains, who lived chiefly on the deer and smaller game found in the wooded stream valleys.

Reeves (1983) believes that the presence of "Besant" projectile points in the Sonota Complex site is more than coincidental. He suggests that:

As represented in the Besant Phase it is a nomadic hunting-gathering culture characterized by a distinctive lithic artifact assemblage and in some areas ceramics, burial mounds and occasional habitation structures. Although origins are obscure, evidence suggests that it has been a resident plains tradition on the Northeastern Periphery since possibly 500 B.C....having acquired ceramics, habitations and burial practices through contact with Middle Woodland cultures, expanded physically to the Missouri Basin...[Reeves 1983:185].

The organizational abilities of the "Besant groups on the Northern Plains is also evidenced by the introduction of artificial structures, commonly called pounds, used to confine or trap bison at the bottom of a "buffalo jumps" or within an arroyo or other natural topographic feature (see e.g., Frison 1971, 1978; Reeves 1983). It is interesting to note that given the reliance and apparent reverence of bison by the Sonota Complex peoples (as well as the Plains Villagers) that the evidence for actual bison kill sites is scanty along the Missouri Trench.

Perhaps the most important of the Sonota Complex sites is Stelzer (39DW242); as it is the largest Plains Woodland campsite known on the Northern Plains (Neuman 1975:3), stretching for 900 meters along the Missouri River. This site is also unique in its large and diverse artifact assemblage. In addition to large quantities of bison bone, burned bone tools, Valley and Scalp Creek cord-roughened ceramics, chipped stone tools, and debitage, 76 features were excavated. These features consisted of hearths, post molds, bone uprights and various soil and ash stains, shallow depressions and midden deposits. On the basis of the large site size and extensive cultural deposits, Neuman (1975:29) concluded that the site area was "occupied intermittently over a long period of time by small groups of people". Concerning the Sonota Complex as a whole, Neuman (1975:96) provides the following summary:

The Sonota Complex is an archeological expression representing a regional segment of a cultural tradition which effectively exploited the plains-riverine environment of north-central North America. If the data have been properly interpreted, sometime around the beginning of the Christian Era and lasting until at least A.D. 600, there existed a culture characterized by small groups of hunters and gatherers whose primary subsistence was oriented toward communal hunting of the buffalo. For the western range of this culture, in the southern portions of Alberta and

Saskatchewan, in Montana, and in the western parts of the Dakotas, the archeological data are drawn from investigations describing the remains of campsites and buffalo impounding or jump butchering stations. Such sites are characterized by layers of buffalo bone, stone projectile points, butchering and hide preparation tools, a lesser number of bone implements, and only rarely small quantities of pottery fragments. On the other hand, along the main trench of the Missouri River and small drainages in the eastern Dakotas, comparable artifacts are found in low, domed, burial mound groups and in campsites herein assigned to the Sonota Complex. In this eastern range, the basic artifact inventories are amended by an increase in ceramics, along with a variety of specialized, regionally elaborate, and at times exotic stone, bone, shell, copper, vegetal, and pigmentary specimens, most of which are associated with the burial mound interments.

It is submitted that the tumuli with their central, subfloor burial chamber and associated funerary objects, along with certain ceramics from the mounds and campsites, reflect derivations transmitted westward by Hopewellian societies most commonly known from sites reported east and southeast of the north-central Plains. Undoubtedly one impetus for this diffusion, whether transmitted directly or indirectly and more likely by both means, was the prominence accorded to such western resources as obsidian and Knife River Flint, which were exotics to the Hopewellian peoples east of the Plains.

The Late Woodland variant occurs from approximately A.D. 600-900 and is most common within southcentral and southeastern South Dakota. Nowak et al. (1982:25.17-25.18) notes that the Late Woodland:

...is recognized by a configuration referred to as the Loseke Creek Phase and is identified at sites found exclusively in the Missouri River drainage and its tributaries, including the James and Big Sioux rivers in southeastern South Dakota and the Niobrara and Platte rivers in eastern Nebraska. Loseke Phase sites extend southward along the Missouri River in western Iowa until it comes into contact with the Sterns Creek Phase configuration in southwestern Iowa and southeastern Nebraska.

The Loseke Creek Phase is characterized by cord-roughened pottery having single-line cord-impressed decorations on the rim, generally in horizontal rows but occasionally in alternate triangles or oblique lines over the horizontal rows. Vessels change from the concoidal form of the Middle Woodland to rounded vessels with pronounced flaring rims and distinct shoulders. Vessel walls tend to be thinner with smoothing over cord-roughening or simple stamping (Syms 1977:91; Ludwickson et al. 1981:132).

The Loseke Creek Late Woodland configuration first recognized by Kivett (1952) at the Feye and Lawson sites in Nebraska, has been identified in South Dakota at the Arp site (Gant 1967), the Hitchell site (Johnston 1967[a]), the Tabor site (Hurt 1961), the Gavins Point site (Brown 1968), the Scalp Creek and Ellis Creek

sites (Hurt 1952), the Spawn Mound (Howard 1968) and the Split Rock Creek Mounds (Over and Meleen 1941).

There are no indications of any Late Woodland sites within the vicinity of the project area although it is possible that they have not been recognized due to the lack of diagnostic artifacts.

The Plains Village Tradition occurs from approximately A.D. 900 into historic times (A.D. 1862). This period is discussed at length by Lehmer (1971) and is divided into the Coalescent Tradition, originating out of the Central Plains and the Middle Missouri Tradition which is thought to have its origins in the eastern woodlands or from an in situ development out of the Plains Woodland Tradition (Lehmer 1971:98; Lass 1981:6-7). Lehmer's (1971) taxonomic system has the Middle Missouri Tradition subdivided into Initial (A.D. 900-1400), Extended (A.D. 1100-1550), and Terminal (A.D. 1550-1675) variants and the Coalescent Tradition composed of Initial (A.D. 1400-1550), Extended (A.D. 1550-1675), Post-Contact (A.D. 1675-1780) and Disorganized (A.D. 1780-1862). Although differences exist between these variants, primarily in terms of ceramics, fortifications, house construction and shape and trade goods; the variants are similar in subsistence (hunting and horticulture), technology and large village occupations, composed of semisubterranean earthlodges.

The initial occupations of the Plains Village groups occurred primarily in southcentral South Dakota and only later did these groups expand into the project area. As a result no Initial Coalescent or Initial Middle Missouri occupations are known to occur within the project area. The first manifestations of the Plains Village Tradition within the area are the Extended Middle Missouri and Extended Coalescent variants. Known Extended Middle Missouri sites in the project area have been listed previously in Table 2 and include 39C0201, 39C0212, 39DW231, and 39DW232. Extended Coalescent sites are more plentiful and larger and include 39C019, 39C0202, 39DW1, 39DW228, 39DW230, 39DW234, 39DW235, 39DW226, and 39DW254. These sites can be divided into two groups based on village plan. Most of these sites are not fortified and have a scattered village plan. The other village plan consists of 39C019, 39DW1, and 39DW234 which Johnson and Hoffman (1966) grouped into the Le Compte Focus. The village plan of these sites is summarized by Lehmer (1971:116):

Each of these villages consists of a number of houses scattered for some distance along the terrace edge. A few houses, usually near the center of the village were surrounded by a curved fortification ditch and seem to have served as a defensive strong point within the community....A palisade with one or two bastions was found inside the ditch at the excavated sites.

The nature of the cultural interaction between the Middle Missouri and Coalescent groups is one of the most intriguing aspects of Middle Missouri prehistory. As Lehmer (1971:126-127) explains:

It seems likely that the occupation of the southern regions by people of the Middle Missouri Tradition was terminated not later than A.D. 1550 because of Initial Coalescent pressure. This would have cleared the way for the northward expansion of the Coalescent peoples, which is one aspect of the transition from

the Initial to the Extended Coalescent Variant.

The Extended Coalescent villages in the Big Bend and lower Bad-Cheyenne regions are scattered groups of houses with no signs of fortifications. They represent a return, after the fortified Initial Coalescent sites, to the older village plan of the Central Plains Tradition. Their characteristics and their numbers argue for a lack of enemies and an opportunity for unopposed expansion of the variant in the southern sections of the valley.

The fortifications of the Le Compte Focus sites (Johnston and Hoffman, 1966) suggest that there was opposition to the Extended Coalescent expansion upstream from the Cheyenne River. This suggestion is reinforced by the five Extended Middle Missouri sites which cluster on the right bank of the Missouri between the Grand and the Moreau Rivers. The only one excavated, Calamity Village (39DW231), produced pottery and other artifacts which definitely link it to the Middle Missouri Tradition. The village had a massive fortification system with a double ditch line. The houses were long-rectangular structures, but the floors seem to have been nearly at ground surface instead of in deep pits. The shallow pits and a simple posthole pattern suggests that this village, like Hickey Brothers, was occupied only long enough for the fortification system to be completed and never achieved the status of a permanent settlement. It seems likely that the Calamity Village population was driven out by the northward-moving Extended Coalescent groups, and that the Extended Middle Missouri villages in the lower Grand-Moreau region represent a sort of way station on the northward withdrawal of the Middle Missouri peoples.

Although the presence of fortifications at some of these sites cannot be denied, Johnson (1985:34-35) discounts some of Lehmer's conclusions:

[Lehmer] suggests that the Grand-Moreau Extended Middle Missouri sites were related to cultural events that created Calamity Village. "It seems likely that the Calamity Village population was driven out by the northward-moving Extended Coalescent groups and that the Extended Middle Missouri villages in the Grand-Moreau region represent a sort of way station on the northward withdrawal of the Middle Missouri people" (Lehmer 1971:127).

Calamity Village is a fortified site that was excavated by a River Basin Surveys crew led by Oscar Mallory in the 1963-1964 seasons (Lehmer 1971:195). As the only excavated site in the Grand-Moreau region for many years, it was used to characterize the Extended Middle Missouri occupation. Lehmer (1971:126-127) suggested a short occupation because the houses had very shallow pits with simple post patterns and there was a light density of artifacts.

Test implications as derived from Lehmer's model would include low artifact recovery from the short occupations, shallow house pits with little evidence of rebuilding and the presence of

fortification systems. Information on the site forms, especially for sites 39C0201 and 39DW224, shows that plentiful cultural material was present on the beach and, therefore, in the general midden within the site. Similarly, excavations carried out at the Travis I site recovered plentiful amounts of expected artifact categories. House plans except at Calamity Village are unknown for the region and cannot be evaluated. At least three and possibly four of the Grand-Moreau Extended Middle Missouri sites (excluding Calamity Village) do not appear to have been fortified. It is unclear if Timber Creek (39C0201) had a single fortification ditch or not. Fortification systems may not have any surface indications, for example, as at Thomas Riggs (Johnston 1967[b]). Also, the three Grand-Moreau sites described here were covered with significant amounts of soil, possibly masking the fortification. None-the-less, the sites are also not in "typical" defensive positions. Therefore, none of the test implications were met and there appears to be little support to consider the Grand-Moreau sites as representing Lehmer's model for Extended Middle Missouri populations as at Calamity Village and Hickey Brothers (Caldwell et al. 1964) while moving north or south and engaging in hostile interactions with other populations.

A second major problem centers around why there are only five Extended Middle Missouri villages (Figure 2; Lehmer 1971: Figure 39) between the northern and southern clusters of Extended Middle Missouri sites. Inspection of site inventory data shows a high number of Extended Coalescent sites in this area and suggests that a contrast may be drawn regarding the land use patterns of the two variants. As there are large numbers of Extended Coalescent sites recorded, inadequate inventory by the River Basin Surveys may be eliminated as possible cause. It is suggested that differences in the economic orientations may help explain differences in settlement patterns.

Johnson (1985:35-36) believes that the low Extended Coalescent density and high Extended Middle Missouri density of cultural remains is related to longer occupations and a higher reliance on horticulture by the Extended Middle Missouri groups, whereas, the Extended Coalescent groups placed a higher emphasis on hunting. While Johnson (1985) states that there may be more cultural materials at the five Extended Middle Missouri villages, this is probably more than offset by the higher number of Extended Coalescent villages within the same area. J. J. Hoffman (personal communication 1987) notes that there is an almost continuous Extended Coalescent occupation along the left bank of Lake Oahe between the Grand and Moreau Rivers. Although both Hoffman (1967) and Stephenson (1971) cite the low quantities of cultural remains recovered from their excavations at Molstad and Potts villages, this could potentially also reflect different disposal practices or that the fortified areas where most of the excavations occurred were occupied to a lesser degree. While the interactions between the Extended Middle Missouri and Extended Coalescent groups have yet to be defined, it is evident that for one reason or another there was a movement of peoples. This is most apparent in the eventual restriction of Middle Missouri peoples during the Terminal variant to the North Dakota area.

Protohistoric/Historic Period (ca. A.D. 1500-1862)

The Protohistoric period is best represented within the project area by the Post-Contact Coalescent variant which is primarily marked by the presence of Euroamerican trade goods. Lehmer (1971:136) notes that:

Ethnology and ethnohistory document some significant distinctions between the three tribal groups in the late 18th and early 19th centuries. The Arikara spoke a Caddoan dialect. The Mandan and Hidatsa languages were both Siouan, but they differed from each other to the point of mutual unintelligibility....

There were other differences in the nonmaterial culture of the 19th-century villagers. These, unfortunately, tend to be only dimly reflected in the materials with which the archeologist has to work. On the basis of the archeological record alone, the uniformities of Post-Contact Coalescent culture are much more apparent than the tribal differences.

The similarities which characterize the cultures of the late village tribes were undoubtedly the product of a convergence of the Middle Missouri Tradition and the earlier manifestations of the Coalescent Tradition. The culture of the historic Mandan and Hidatsa was directly rooted in the Middle Missouri Tradition, but the northern village tribes had lost enough old traits and had added a sufficient number of new ones to place them well within the Coalescent range. Post-Contact Arikara culture was an outgrowth of the Extended Coalescent complex. But there were changes there too, especially in pottery and village plan. Those changes all worked to increase the similarity between 18th-century Arikara and Mandan-Hidatsa cultures.

Although no Post-Contact Coalescent sites are known to exist within the project area, a number of villages cluster around the mouth of the Grand River (see Lehmer 1971:Figure 82). Many of these sites were fortified and it is generally believed that this was due to the increasing threat from the equestrian nomadic groups. However, initially equestrian groups such as the Dakota, Cree and Assiniboin also functioned as middlemen between the Euroamericans and Middle Missouri villages but with the increased contact with the Euroamericans, the Plains villages were also in a position to profit from this system.

The advent of European settlers in eastern North American and the Southwest stimulated the older trade patterns enormously, and the Middle Missouri villagers were ideally situated to profit from the increased activity. Trade goods from east and north of the Missouri were in great demand by the tribes to the west and south of the river. Horses and mules obtained by the western tribes from the Spanish ranches in the Southwest were in equally great demand by the eastern groups. The villagers along the Middle Missouri became, in effect, brokers who managed the actual exchanges between the eastern and western tribes with a considerable profit for themselves.

Parties from the west arrived at the villages at intervals,

bringing horses and mules and their own products including leather goods, dried meat and pemmican, and flour made from the prairie turnip....The western tribes exchanged their wares for the villagers' garden crops and for guns and other trade goods. The villagers then used the horses and mules, supplemented by their crops, to renew their supply of trade goods through exchanges with the Dakota, Assiniboin, and possibly some Cree and Ojibwa middlemen [Lehmer 1971:169].

Increased hostilities between the villagers and equestrian groups during this period, combined with devastating epidemics served to reduce the village populations and their power.

The epidemics of 1837-38 and 1856 resulted from white carriers spreading the infection to the village tribes. Some of the earlier outbreaks may have been due to direct contagion from the Whites, but there seems to be a good possibility of transmission to the village tribes by Indians rather than Whites. Stearn and Stearn (1945, pp. 46-49) cite a passage from Warren's History of the Ojibway in which there is a description of the spread of smallpox to that tribe by a war party which raided a Hidatsa village during the epidemic of 1780-81, and they report that in the same period smallpox killed over 5000 of the Indians of the Mission Pueblos in New Mexico. The occurrence of epidemics in the Southwest and Middle Missouri subarea in the same years raises the possibility of a spread from one area to another. It seems likely that the traffic in horses from the Southwest to the Middle Missouri subarea was the vehicle for transmission [Lehmer 1971:174].

The Disorganized Coalescent variant is the period which Lehmer (1971) proposed for the decline of the Plains Village period. The Leavenworth site (39C09) is one of the last villages occupied by the Arikara. The site is comprised of two villages which straddles both sides of an ephemeral drainage, a few miles above the confluence of the Grand and Missouri rivers. Its geographic position allowed the villagers to capitalize on the east-west trade mentioned previously. The importance of this site both historically and archeologically led to extensive excavations of the village (Krause 1972) and associated cemeteries (Bass et al. 1971). The events leading up to the abandonment of this site in 1832 are discussed by Krause (1972:15) below:

The number of separate village communities diminished rapidly in the early 1800's. At the turn of the century, trouble with the Mandan forced the Arikara in North Dakota to move downriver (Thwaites 1904: I, 204), and by 1804 most of the former North and South Dakota dwelling groups had settled together in three large fortified villages near the Grand River (Abel 1939:124). Lands below the Grand were deserted by 1804 and seem never to have been occupied again. There were several small camps north of the Grand but these may have been hunting parties from the three large southern settlements (Thwaites 1904: I, 187-89; 195-97).

These Grand River settlements became a favorite stopping point for almost all expeditions to the Upper Missouri. A number of

Europeans resided in one or another of the three villages but the first to leave a written account of his exploits was Pierre Antoine Tabeau. In 1804 Tabeau (Abel 1939:142) reported the Arikara occupying two villages on the west bank of the Missouri and a third on an island a league below. The Arikara were occupying these three villages late the same year when Lewis and Clark passed them on their way to the Pacific Northwest. All three villages were still inhabited when the explorers returned in 1805 [actually 1806] (Thwaites 1904: II, 186-87), but the island village was abandoned sometime before 1811. Evidently its inhabitants moved to the two west-bank settlement which remained. The two west-bank settlements were the residence of an estimated 2,000 Arikara when Brackenridge (1816: 11), and Bradbury visited them with the 1811 Astorian expedition.

Twelve years later, the west-bank villages were the site of a battle between the inhabitants and fur traders under the command of General H. L. Ashley. In reprisal for this fight, and for various political reasons, the United States Government sent Col. Henry Leavenworth to punish and subdue the rebellious villagers. In 1823 Leavenworth's 6th regiment, along with a contingent of irregulars from the Missouri Fur Company and 400-500 Dakota Sioux mercenaries, attacked and shelled the villages with little success. As a consequence of the battle, and after several abortive attempts to make peace, the villagers escaped upriver to a point near the Mandan winter villages in North Dakota. The abandoned Arikara villages were burned, probably by the irregulars from the Missouri Fur Company, although they denied responsibility for the act (Robinson 1902:202).

The Arikara remained in North Dakota for a year, then returned to rebuild the Grand River villages. The rebuilt villages were occupied in 1825 when the Arikara signed a peace treaty with the Atkinson-O'Fallon expedition (Reid and Gannon 1929:7-8). They were still occupied when Catlin painted a panorama of them in 1832 (Bushnell 1922), but were soon abandoned. Maximilian (1906:335-36) found them deserted in the spring of 1833.

As the Plains Village groups were reduced and displaced, the Missouri River Valley was occupied by various representatives of the Horse Tribes. Howard's (1976:28) discussion of the John Bear Winter count places a number of Yanktonai encampments along the Missouri River including one on the lower Grand River in 1724. Zimmerman (1985:127) suggests that the occurrences of stone circle sites may also be indicative of these occupations. There is also evidence that some bands of the Sioux and other tribes may have occupied abandoned Plains Village earthlodges or built their own. Alfred Vaughn (1855:72) for example, noted that:

About 100 miles above Fort Pierre I found erected twelve lodges of the Yanktonais, built with dirt, after the manner of the Arikarees and Mandans, and they are tilling the soil in the same manner of those bands. I am sorry to say that the great drought in that region of their country was such that all kinds of vegetation presented but a very languishing appearance. This is

the first attempt of this band to form a permanent village and cultivate the soil....

The location of this small village described above would place it in the general vicinity of the project area. The establishment of the Great Sioux Reservation and later Standing Rock Reservation witnessed an increased occupation of the project area as represented by the numerous historic sites recorded during the 1986 inventory. Additional information concerning the events of this period are provided in the following chapter.

CHAPTER FOUR HISTORICAL OVERVIEW

Dori M. Penny and Paul H. Sanders

Introduction

The purpose of this historical overview is to provide the basis for the development of a context for the evaluation of historical cultural resources within the project area. The majority of the historical cultural resources recorded within the study area are believed to result from post-1880 Native American occupation. While the emphasis of this overview will be on the events that took place after the Fort Laramie treaty of 1868, earlier Native and Euroamerican utilization and occupation of the area will also be presented.

La Verendrye

The La Verendrye expedition was the first European expedition to enter the Northern Plains and keep a written record of their experiences (Smith 1980:ix). Unfortunately the record of the La Verendrye brothers trip through South Dakota was apparently written some time after their return to Fort La Reine (Smith 1980:115-116). The document that Smith (1980:115) analyzed in his account was probably a copy, made in Quebec, of the Chevalier's (the eldest La Verendrye brother) original letter to Beauharnois, the Governor General of New France. The following discussion is a summary of the information pertinent to the study area from the letter of the Chevalier to Beauharnois, as available in Smith (1980).

The sons of Pierre Gaultier de Varennes, the Sieur de la Verendrye, returning to the Mandan villages by some unknown route through western and central South Dakota encountered the Gens de la Petite Cerise on March 15, 1743 (Smith 1980:112). They were returning from their winter villages (d'hivernement), and were two days' march from their fort, which is on the bank of the Missouri....There was a man among them who had been brought up among the Spanish and spoke their language like his own....He informed me first that three days' journey from where we were, there was a Frenchman who has been settled there for several years...

On an eminence near the fort I deposited a lead tablet bearing the arms and the inscription of the king and placed some stones in a pyramid for the general. I told the Indians, who had no knowledge of the lead tablet I had put in the ground, that I was setting up these stones in memory of the fact that we had been in their country. I should greatly have wished to take the latitude at this place, but our astrolabe had from the beginning of our journey been useless, the ring being broken.

We left on April 2, to the great regret of the whole nation. They earnestly begged us to come again and see them.

On the ninth, about noon, we came to a village of twenty-five families of the Gens de la Fleche Coulee [People of the Glued Arrow], otherwise called the Sioux of the Prairies. We passed among the women and the baggage and stopped for a very short while. They were quite friendly and showed us the place where they were going to camp. We kept within sight of their village, expecting that some of them would come to see us, and keeping constantly on our guard, but no one came.

The next day we resumed our journey, sometimes north-northeast, and sometimes northwest, till we came to the Mantanes without meeting anyone. We reached that place on May 18 [Smith 1980:112-144].

The eminence near the fort of the Gens de la Petite Cerise where the Chevalier placed the lead tablet is apparently near present day Fort Pierre.

This plate, six by eight inches and one-eighth inch thick, was discovered on a hill near the high school building in Fort Pierre. The obverse carries a die-stamped Latin inscription with the arms of Louis XV; each corner bears a fleur-de-lis. The reverse side bears a brief legend incised in French....The text of the French inscription on the plate found at Fort Pierre is one derived after consultation with the Canadian historian Benjamin Sulte and the former French ambassador and scholar Jules Jusserand, by Dr. Louise P. Kellogg of the Wisconsin Historical Society and Doane Robinson and others of the South Dakota State Historical Society:

Placed by the Chevalier De La Verendrye Lo [Louis]
Jost [Joseph] Verendrye, Louis La Londette and A.
Miotte, The 30 March 1743 [Smith 1980:125].

Smith (1980:121) states that the Gens de la Petite Cerise were the Arikaras who are "known from historical and archaeological evidence to have lived in what is now central South Dakota". The identification of the Gens de la Fleche Coulee, who they encountered after leaving the fort of the Gens de la Petite Cerise, is uncertain. However, Smith (1980:121) suggests that "they were the Yanktonais, who were in the general area about that time." The area where they encountered the Gens de la Fleche Coulee is almost certainly within or near the project area. Robinson (1916:368-377) speculated that the Verendryes traveled to the Mandan villages along or very close to the east bank of the Missouri River. Whether they traveled on the east or west side of the Missouri River, is not known, however, they do state that they encountered no one after leaving the Gens de la Fleche Coulee until they reached the Mandan villages (Smith 1980:121).

Later European Exploration

Approximately 20 years after the La Verendrye explorations, the French

were forced to cede their territory west of the Mississippi River in what is now the United States to the Spanish and their territory in what is now Canada to the British as a result of the Treaty of Paris in 1763 (Schell 1975:30). While this changed the national affiliation of the fur traders and the explorers in the Missouri Valley, it did not change the basic goal of economic exploitation.

In order to protect its interests, Spain established a settlement at the site of present day St. Louis in 1764 (Schell 1975:30). By the 1780s it was apparent to the Spanish that the British traders were significantly encroaching on Spanish territory in the Upper Missouri Valley. While a number of expeditions were commissioned at St. Louis for the purpose of expelling the British traders and organizing Spanish trading in the area, only a few reached as far north as the study area. Among these were Jacques D'Eglise who "under a license which permitted him to hunt on the Missouri, ascended the river all the way to the Mandan villages, taking with him some merchandise for trading purposes" (Schell 1975:31). D'Eglise operated independently for a number of years, making several trips up and down the Missouri and trading predominantly in the area of the Mandan villages, significantly north of the project area (Schell 1975:32-33).

Jean Baptiste Truteau led the next expedition of any significance along the Missouri River in 1794. This expedition was funded by the Missouri Company, an organization licensed by the Spanish in hopes "of establishing a trade monopoly with the Mandans and ousting the British from Spanish territory" (Schell 1975:32). Because of a series of setbacks Truteau did not reach the newly relocated Arikara villages [39C09, Leavenworth village] on the Grand River until 1795 (Schell 1975:34). It is believed that Truteau spent two winters at the Arikara villages (Schell 1975:34). During this time Truteau almost certainly would have had contact with any inhabitants living within the study area.

Perhaps the most important expedition funded by the Missouri Company was that of James Mackay in 1795. John Evans, a member of the Mackay party was sent back up river in 1796 "with instructions to discover a passage from the sources of the Missouri to the Pacific Ocean" (Wood 1981:41). Evans "...did not find what he was sent to discover, but he produced what was to be one of the most important maps available to Meriwether Lewis and William Clark in planning and executing their famous expedition up the Missouri River in 1804" (Wood 1981:39). This map is the "first accurate eyewitness map of the Missouri River in what is now North and South Dakota" (Wood 1981:42). Sheet 4 of this map covers an area "from 'I good hope' (a modern unnamed island) to 'Piaheto/Eagle Feather' Creek (modern John Grass Creek), South Dakota. While extensive additions appear to have been made on this map by William Clark, no additional notations were made to the area comprising the study area. The Moreau River is labeled "R au Morrow", an unnamed drainage is drawn with a north-south orientation between the "R au Morrow" and the "R au Corn" (the Grand River). This unnamed stream has its confluence with the Missouri just above "Shaved Island," (Blue Blanket Island). The relationship between Blue Blanket Island and the unnamed drainage would indicate that the unnamed drainage could be Deadman Creek.

Lewis and Clark

The Lewis and Clark expedition was the culmination of more than twenty years of planning by Thomas Jefferson for an expedition of discovery beginning at the Missouri River and ending at the western coast of the continent. At the time the expedition was organized, the Missouri Valley west of the Mississippi was in French territory. However, in December of 1803, the United States completed purchase of the Louisiana Territory. Lewis and Clark "probably witnessed the ceremony in St. Louis by which France transferred Upper Louisiana to the United State on March 10, 1804" (Moulton 1986:174).

The expedition left Camp Dubois (near the confluence of the Missouri and the Mississippi) on May 14, 1804 (Moulton 1986:60). It was not until October 7, 1804 that the Lewis and Clark expedition passed the river now known as the Moreau (Sur-war-kar-na or Park):

[Clark] 7th of October Sunday 1804 a Cloudy morning. Some little rain frost last night, we set out early proceeded on 2 1/2 miles to the mouth of a (1) river on the L. S. and brackfast this river whin full is 90 yards wide the water is at this time Confined within 20 yards, the Current appears jentle, this river throws out but little Sand at the mouth of this river we Saw the Tracks of White bear which was verry large, I walked up this river a mile - below the (2) mouth of this river, is the remains of a Rickorrie Village or Wintering Camp fortified in a circular form of a bout 60 lodges, built in the Same form of those passed yesterday This Camp appears to have been inhabited last winter, many of their willow & Straw mats, Baskets & Buffalow Skin Canoes remain intire within the Camp, we passed the Ricares Call this river Sur-war-Kar-na or Park....from this river [NB: which heads in the Ist black mountains] we proceeded on under a gentle Breeze from the S.W. at 10 oClock we Saw 2 Indians, on the S.S. they asked for Something to eate, & informed us the were part of the Beiffs De Medisons [NB: Beuffles de Medecines] Lodge on their way to the Rickerreis, passed (3) a willow Island in a bind to the S.S. (4) at 5 miles passed. a willow Island on the S.S.- wind hard from the South in the evening I walked on an (5) Island nearly the middle of the river Called Shaved Grouse Island, [NB: (the wall of a village on this island)] one of the men killed a Shee Brarrow, another man killed a Black tail Deer, the largest Doe I ever Saw (Black under her breast) this island is nearly 1 1/4 ms. Squar no timbr high and Covered with grass wild rye and Contains Great numbers of Grouse, we proceeded on a Short distance above the island and Camped on the S.S. a fine evening [Moulton 1987:149].

The "Bufs De Medisons" were apparently part of a band of Teton Sioux that the expedition had encountered downstream (Moulton 1987:148). Based on the expedition map, course distances and references, the October 7, 1804 camp was on the east side of the river, very near the present town of Mobridge (Moulton 1987:150) who notes that:

Grouse Island is the later Blue Blanket Island, between Dewey and Walworth counties, South Dakota; it is now inundated by Oahe Reservoir. Clark noted the walls of an abandoned village on the island on Atlas map 25, but did not comment on it in the text, although there is an interlineation reference in the codex journal. The village appears to have been a short-lived Arikara site probably occupied during the 1780s to 1790s.

Information about the Post-Contact Coalescent Blue Blanket Island village is summarized in Stephenson (1969) and Lehmer (1971). Two sites recorded by the Smithsonian Institution River Basin Surveys may be the abandoned "Rickorrie Village or Wintering Camp" noted by Clark just below the mouth of the Moreau. Two villages (39DW216 and 39DW217) were recorded by R.C. Farrell and J.J. Hoffman in 1952 on the south side of the Moreau River near its confluence with the Missouri River. The fortified and roughly circular site 39DW216 consists of approximately 30 lodges and is the closest of the two to the confluence. The age of this site is not known but no Euroamerican trade goods were recorded by Farrell and Hoffman. Site 39DW217 is listed as Extended Coalescent by Lehmer (1971: Figure 77). It is not presently known if either of these sites are associated with Lewis and Clark's village, however the lack of observed trade goods or any mention of a historic village by any other sources (e.g., Sigstad and Sigstad 1973) suggests that this village was destroyed by shifts in the Missouri River channel.

Clark's journal entry for October 8, 1804 indicates that the expedition passed the Grand River (We-tar-hoo) on that date:

....a cool morning wind from the N.W. passed the mouth of a Small Creek on the L.S. about 2 1/2 Miles above the Isd. Passed the Mouth of a River on the L.S. called by the Ricaries We-tar-hoo. This river is 120 yards wide, the water confined within 20 yards, throws out mud with little Sand, great quantities of red Berries resembling Currents near the mouth of this river [Moulton 1987:150].

On their return trip, the Lewis and Clark expedition camped downstream of the Grand River on August 22, 1806. This camp was on the west bank of the river immediately adjacent to the study area within an area now inundated by Lake Oahe. Mattison (1953:106-107) summarizes the journal entries for that day:

On their return trip the explorers, after spending a rainy night across from the Arikara Village I & II, [39C09] had another council with the chiefs. About eleven o'clock the party set out and after traveling for about seventeen miles, encamped on the "Main NE Shore" below Grouse Island, believed to be Blue Blanket Island. (The actual distance between the Ree Villages and this point...is 19.5 miles). A Frenchman who had been remaining at the villages, joined the party for the trip down the river.

Fort Manuel Lisa

Manuel Lisa was a prominent fur trader and one of the founders of the

St. Louis Fur Company (Schell 1975:51). The St. Louis Missouri Fur Company was reorganized in 1812 and renamed the Missouri Fur Company (Schell 1975:52). Lisa had made a number of trips up the Missouri by 1812, when he organized the expedition that was to found Ft. Manuel Lisa (39C05) on a terrace near the confluence of Hunkpapa Creek and the Missouri River, some distance north of the study area (see Sanders et al. 1987). Mattison (1953:144) summarizes the history of the expedition in this way:

The expedition comprising 88 members under the leadership of Lisa, after leaving St. Louis, passed Grand River August 6. Not finding a suitable location for a post at this place, Lisa and his men went on to the Arikara villages [39C09]. The Rees insisted on their building the post there but Lisa did not regard that place as satisfactory. The party proceeded on to a point near the present North and South Dakota line, arriving there August 9 and decided to build at that place. Work on the post began the following day.

John C. Luttig kept a journal from the time the expedition left St. Louis until they were apparently forced to abandon the post in March, 1813. From Luttig's journal, we can garner some information about European lifeways on the Missouri in this period. It is from Luttig's journal that historians derive their evidence of the death on December 20, 1812 and presumed burial of Sakakawea at Fort Manuel Lisa:

....this Evening the wife of Charbonneau a Snake Squaw, died of a putrid fever she was a good and the best women in the fort, aged abt 25 years she left a fine infant girl [Luttig 1920:106].

Shortly before the apparent abandonment of the fort sometime after March 5, 1813, Luttig (1920:127) wrote "we are constantly watching in our careful situation, we hear and see nobody all around us, and are like prisoners in Deserts to expect every moment our fate." Archeological evidence indicates that the fort was burned, probably after its deliberate abandonment:

The immediate reasons which led the traders to depart are as obscure as are the precise circumstances surrounding the burning of the post. The possibility that the station was set afire by accident rather than by design can hardly be ruled out, but it is also possible that it was set afire by the traders themselves. The archaeological evidence suggests that the abandonment had been quite a deliberate one, which would seem to controvert the notion that Indians had been responsible for burning Fort Manuel [Smith and Ludwickson 1983:80-81].

The first written account of the Arikara villages [39C09] on the Grand River, located north of the study area, comes from Pierre Antoine Tabeau's narrative (Abel 1939:142) who described three Arikara villages (two on the west bank, one on the island below) at that location in 1804 (Krause 1972:15). The villages were subsequently visited by a number of Europeans and Euroamericans, including Lewis and Clark (Krause 1972:15; Moulton 1987:150-151). From documentary evidence, it would appear that the Ashley Island village Tabeau recorded was abandoned about 1811.

The Arikara villages (39C09) were in a strategic position to restrict travel on the Missouri. In 1823, the Arikara attempted to prevent the Ashley party from continuing up the Missouri and killed 14 of Ashley's party during the attack (Schell 1975:58). Ashley requested aid from the military stationed at Fort Atkinson (Schell 1975:58). Krause (1972:15) states:

In reprisal for this fight, and for various political reasons, the United States Government sent Col. Henry Leavenworth to punish and subdue the rebellious villagers. In 1823 Leavenworth's 6th regiment, along with a contingent of irregulars from the Missouri Fur Company and 400-500 Dakota Sioux mercenaries, attacked and shelled the villages with little success. As a consequence of the battle, and after several abortive attempts to make peace, the villagers escaped upriver to a point near the Mandan winter villages in North Dakota. The abandoned Arikara villages were burned, probably by the irregulars from the Missouri Fur Company, although they denied responsibility for the act (Robinson 1902:202).

The Leavenworth reprisal had a profound affect on Arikara settlement patterns. They remained in North Dakota for a year, then returned to rebuild the Grand River villages (Krause 1972:15). The Atkinson-O'Fallon expedition journal later recorded their re-occupation of the Grand River Villages in 1825. The villages were occupied until sometime after Catlin's visit in 1832 although Maximilian recorded the villages as abandoned in 1833 (Krause 1972:15). After 1833, the area was occupied only by the Sioux.

The Atkinson-O'Fallon Commission

The Atkinson-O'Fallon Commission was a military expedition to the Yellowstone River in 1825. Its primary purpose was to establish treaties with the various Native American groups believed to be holding territory along or adjacent to their route (Reid and Gannon 1929:7). Treaties were made between the United States and 12 Native American groups (Reid and Gannon 1929:9-10). Two of these treaties were made with the Hunkpapa and the Arikara at the Arikara Villages on the Grand River.

The Atkinson-O'Fallon Commission traveled on the Missouri River between the Moreau and the Grand during the middle of July and again in early September on their return trip. While much of the information recorded pertained to mileages, some of the information is of general interest to the study area. A summary of these journal entries (Reid and Gannon 1929:29) suggest that the "Hidden Creek" where the expedition encountered "Fire Hearts Band of Siones" is "One of the Small creeks about ten miles below the Moreau". If this is the case, then Wednesday, July 13, 1825 through Friday, July 15, 1825 the expedition would have been traveling between the Moreau and the Grand rivers.

Wednesday 13th July, 1825. Proceeded at 1/4 past 4 and ran 7 miles & came to at 1/2 past 7 on the left Bank for breakfast -- proceeded at 9 & ran until 4 having had a fine wind for sailing, made 10 miles & came to for dinner on the left Bank, proceeded at

1/2 past 4 & ran till 1/2 past 5 & came to for the night on the left bank, made 14 miles today. At 6 it rained heavily with hail & thunder, the bank was covered with black currents at this place of a size larger than we have seen before, some were the size of a musket ball....

Thursday 14th July. Proceeded at 4 & ran till 1/2 past 7 & came to on the right bank for breakfast making 5 miles -- here we found Capt. Armstrong encamped, proceeded at 9 o.c. & ran 6 miles till dinner -- right bank 1/2 past 1 o.c., proceeded at 3 o.c. & ran 5 miles & came to at 1/2 past 5 o.c. on the right bank for the night....

Friday 15th July. Proceeded at 4 o.c. & ran 5 miles & came to on the left bank for breakfast at 1/2 past 7 o.c. -- proceeded at 9 & ran till 2 o.c. & came to on the right bank 1/2 mile below the Aricara Village....

On the return trip the expedition traveled the Missouri River between the Grand and Moreau rivers on the 4th and 5th of September:

Sunday 4 Sept. Proceeded at 1/2 past 4 & arrived at the Aricara Village at 1/2 past 9. The 6 chiefs of this tribe visited us on board of the Mink & rd [received] presents -- 5 guns & 2 pistols -- Blankets and cartel -- chiefs coats -- powder -- Bale & other small articles. They appear decidedly friendly & are greatly pleased with the presents. 6 lodges of Cheyennes are here & the principle man & 8 others visited us & recd presents. 3 Sioux are We recd from the Arikara a pouch of plain & a pouch of sweet corn. Having finished all our business here we proceeded on our descent of the river at 3 o.c. & ran till 7 & came to on the right bank for the night. We have on board of the fleet 4 Pawnee Loups who had been on a visit with some 20 other to the Aricaras....

Monday 5 Sept. Proceeded at 1/4 past 4 & passed the Moro [Moreau river] at 1/2 past 7...[Reid and Gannon 1929:46-47].

The Fur Trade

As previously noted, a number of expeditions traveled the Missouri River and adjacent areas during this period. Most of this travel was in association with the fur trade. After the Arikara villages at the Grand River were abandoned, traffic on the Missouri River in modern South Dakota was virtually unhindered. It was during this period that a European and Euroamerican community developed at Fort Pierre. Missionaries entered the area for the purpose of ministering to the settlement at Pierre and to other such communities that had developed in connection with the fur trade (Schell 1975:63-64).

Manifest Destiny

By the 1840s, the fur trade had begun to decline and a shift in

emphasis away from temporary use of the area towards permanent settlement of the area was occurring. In the 1850s settlements of Euroamericans were established on the Platte River in Nebraska Territory, at Sioux City (now South Dakota), and between the Missouri and the Big Sioux Rivers (Schell 1975:65-66). Prior to this European and Euroamerican emphasis had been on economic exploitation of the land involving temporary use (e.g., the fur trade). However under this new type of economic exploitation, large areas became controlled by the Europeans or Euroamericans for agricultural uses resulting in more permanent settlements.

The resultant increase in hostilities between the Native Americans and the immigrants for the control of the land necessitated a militaristic response by the United States government. A number of forts were established and a map of the Northern Plains was commissioned (the G. K. Warren map). The construction of forts and the increase in military presence in the area led inexorably towards the confinement of Native American groups to reservations.

G. K. Warren Map

In 1856 Lieutenant G. K. Warren began a detailed reconnaissance of the Northern Plains for the purpose of preparing a map to facilitate military operations in the area (Schell 1975:68). The Warren map was not published until 1875. The G. K. Warren map shows an "Old Dirt Vil" above the mouth of the Moreau River on the west bank. The village is illustrated below the bluff edge. Site 39DW254 occurs at the base of this bluff but consists of only a single house depression. It seems more likely that the village noted on this map corresponds to the larger 39DW1 earthlodge village immediately to the north or one of the villages occurring within the nearby excluded area (Winham and Butterbrodt 1983). No other cultural features within the project area are labeled on this map.

On the G. K. Warren map, the Grand and Moreau Rivers are spelled according to modern convention. Blue Blanket and Fox Island are also named and spelled according to modern convention. The north-south trending bluffs along the Missouri between the Grand and the Moreau are labeled Hawthorne's Bluffs, a name which is not believed to be presently in use. The historical significance of this name is not known.

Fort Pierre

Fort Pierre was established by Pierre Choteau at the mouth of the Bad River in 1831 (Schell 1975:55). The post was one of the largest and most important in the Missouri Valley until the decline of the fur trade in the late 1840s and early 1850s (Schell 1975:56). Army representatives purchased the fort from Choteau and Company in 1855 (Schell 1975:66). Fort Pierre was the closest American military presence to the study area at this time. Due to unsatisfactory living conditions, Fort Pierre was abandoned by the Army in 1857 in favor of the newly constructed Fort Randall (Schell 1975:68).

Dakota Territory

The Yankton Sioux entered into a treaty with the United States government in 1858. In accordance with the provision of this treaty, the Yankton were removed to a reservation of 400,000 acres on the east bank of the Missouri River in the present area of Charles Mix County (Schell 1975:71). The removal of the Yankton from most of southeastern South Dakota in July 1859 provided for the opening of Dakota Territory to settlers. The population of the territory continued to increase and in 1861 Congress passed a bill that provided for the creation of Dakota Territory (Schell 1975:77). The increase in settlers and the creation of the Dakota Territory placed additional pressure on the Government to provide land. The Homestead Act (1862), which provided 160 acres to the homesteader, served to further increase the demand for land in areas that were populated by Native Americans at this time. However, it was not until after the Civil War that a tremendous increase in emigration began to impact the area occupied by the Sioux in South Dakota. By 1865, the Government recognized a need to negotiate with the Sioux and formed the Edmunds Commission (Schell 1975:87).

At a council called in October at the original site of Fort Sully below Fort Pierre, the Edmunds Commission made nine separate treaties with members of the seven subtribes of Teton Sioux as well as two bands of Yanktonnais. Congress later ratified all these agreements. The tribes...agreed to withdraw from overland routes already established or contemplated through their country. The Lower Brule agreed to a permanent reservation along the Missouri north of the White River [Schell 1975:87].

These treaties were predecessors to the Fort Laramie Treaty of 1868.

The Fort Laramie Treaty

The Fort Laramie Treaty of 1868 provided for the closure of the Bozeman Trail and the Powder River country to the emigrants. In exchange, the construction of the Union Pacific Railroad and travel on other emigrant trails was to continue and the Sioux were confined to an "area in Dakota Territory from the Nebraska line to the 46th parallel between the Missouri River and the 104th degree of longitude...the Great Sioux Reservation" (Schell 1975:88).

In the same year agencies were established on the Cheyenne and Grand rivers. The Grand River location, immediately north of the study area, was the agency assigned for the "Hunkpapas, Yanktonnais, and a portion of the Blackfoot bands..." (Schell 1975:91). Christian missions were later established at these agencies. The Minneconjou, Sans Arc, Two Kettle and the remaining Blackfoot were assigned to the Cheyenne River Agency (Schell 1975:91). In 1870 the military established Fort Bennett near the mouth of the Cheyenne River where the Two Kettle, Minneconjou, Sans Arc and Blackfoot went to collect their annuities (Cudmore and Nelson 1984:12).

The construction of log cabins for the use of individuals confined to the reservation began in 1872 (Cudmore and Nelson 1984:12). Indian policy in the 1870s emphasized the adoption of Christianity and a Euroamerican

lifestyle. During this time, many historians have perceived a dichotomy in the population confined to reservations (e.g., Schell 1975; Milligan 1976). The dichotomy has traditionally been expressed as a description of the "friendly" or agency-oriented Indians versus the "hostile" Indians.

During the early to mid 1870s the number of "hostile" individuals or those rejecting the dependency on the agency increased. Life at the agencies was hard for the Indians. Annuities arrived sporadically and were often of inferior quality and small quantity due to spoilage during the long period of shipment and fraud within the Indian Bureau. A few hundred acres were brought under cultivation at a location about four miles from the agency but these fields were insufficient to provide food for the resident Indian population. Game became virtually non-existent near the agency and the food shortage became more acute after the Indians were required to live within fifteen miles of the agency (Milligan 1976:23).

The winter of 1874-1875 was particularly severe at the Standing Rock Agency, the successor of the Grand River Agency. The Indians were put on half rations because the annuity goods did not arrive before winter set in. The Indians became understandably sullen but they did not commit hostile acts against Whites at the agency. By the time the rations arrived in late spring most of the Indians were near starvation and many had abandoned the reservation life to join kinsmen in the unceded hunting areas to the west of the reservation. Sioux continued to slip away from the agency in growing numbers until the spring of 1876. The starvation conditions on the reservation led "hostile" Sioux like Sitting Bull to conclude that dying in battle against the Whites was preferable to starving at the agencies (Milligan 1976:25-26).

In the spring of 1874, Lieutenant Colonel George Armstrong Custer led a mapping expedition to the Black Hills. Gold was discovered and before the troops had returned to Fort Lincoln that August, a stream of miners began to invade these lands which had been guaranteed to the Sioux. Until the late fall of 1875, the Army had orders to stop and remove all Whites in and bound for the Black Hills. By that fall, however, the task proved impossible with the available troops. Settlement and mining became widespread throughout the Hills and the Sioux and Northern Cheyenne, to whom those lands were sacred, were irate. Open hostilities broke out between Indians and Whites. Pressured from all sides and concerned about the growing number of Indians in the uncaded territories to the west of the reservation, the government ordered all Sioux to the Missouri River agencies by November of 1875, or they would be considered hostile. Compounding this situation, in May of 1875 a delegation from the Cheyenne River Agency along with delegations from other agencies was sent to Washington, D.C. to discuss a further land cession which would include the Black Hills and possible removal of the various tribes to the Indian Territory in Oklahoma Territory (Schell 1975:130-131; Milligan 1976:39). The delegations returned to the reservation without committing themselves (Schell 1975:131). The terms for the sale of the Black Hills and the cession of large areas of the Great Sioux Reservation were rejected by its inhabitants (Schell 1975:132-133).

With little game, short rations, and the fear that their ponies and arms would be confiscated by the Army, large numbers of Sioux and Cheyenne slipped out of the agencies during the winter of 1875-1876 and the spring

of 1876. They gathered at the best of the remaining hunting grounds, south of the Yellowstone River and north of the Bighorn Mountains, in northcentral Wyoming and southern Montana. In the spring and early summer of 1876, the Army mounted a powerful three-pronged campaign to defeat the off-agency Sioux and Cheyenne and to force them permanently onto the reservations. One major force of the campaign departed Fort Abraham Lincoln on the morning of May 17, 1876, under the command of General Terry. On the 25th and 26th of June, Custer and the Seventh Cavalry met the Sioux and Cheyenne in a colossal battle on the banks of the Little Bighorn. Custer and his immediate command of five companies were killed. As a result of this resounding defeat, the military took control of the agencies on the Great Sioux Reservation and confiscated the guns and the horses of those residing at the agency. During the winter and spring of 1877, Sioux from a number of agencies under the leadership of Sitting Bull and Gall settled in Canada, while others returned to the agencies (Schell 1975:138-139).

Sitting Bull surrendered at Fort Buford, Dakota Territory on July 19, 1881. Sitting Bull and 166 of the individuals who had accompanied him to Canada were first sent to Fort Randall where Sitting Bull was imprisoned and then, on his release, returned to the Grand River that was to become the Standing Rock Reservation.

One of the few descriptions of the interior of an agency built log cabin resulted from the visit of Mary C. Collins, a Congregational missionary assigned to Oahe mission, to the home of Sitting Bull:

We visited Sitting Bull's home which is a log cabin with dirt roof and pine floor, about fourteen feet square, with one door and two half windows.

The furniture of the Noted Chief consists of a working stove, frying pan, bread pan, kettle and coffee pot. Not a table, chair or bedstead in the house. His Royal couch, is a dirty bed tick filled with prairie grass. The bed clothing was absent as Sitting Bull and both his wives had wrapped themselves in them and gone visiting. On the wall hung a finely embroidered war shirt made of buckskin and wrought in porcupine quills....We asked his motherinlaw (one of them) where all the goods the Agent had recently given to him, she told us that Sitting Bull was very sick and had given away all his goods to the Medicine men for conjuring him [Collins 1884].

A number of small communities, including the one that surrounded Sitting Bull's cabin, were formed at this time. These communities appear to have formed around the missions, the agencies and/or a group of related individuals with missions often becoming later established. Specific to the project area are the communities of Promise and Blackfoot (Moreau or Jim Town). Duratschek (1947:234-235) notes that:

Although the number of Catholic Indians in the various camps was not large, it was important to have churches built in each. The missionaries soon discovered that, in general, the natives would not attend religious services in any but their own camp....

The missionary was compelled to adapt his method to the comprehension of his people. Consequently, as soon as possible churches were erected. Some were so small that it requires a stretch of the imagination to designate them as churches, others were as poor as the homes of many of the Indians--a log house with a dirt floor. That was all.

The pre-Lake Oahe townsite of Promise (39DW112) was recorded during the 1986 Larson-Tibesar Associates inventory (see Chapter Seven). Promise was named for the priest Wahoyapi (John Promise). The town was apparently in existence by the late 1880s when a Christian mission was established there (Cudmore and Nelson 1984:28). The town later gained prominence as the location of a railroad spur that spanned the Moreau River in 1910 (Robinson 1930:386). The town was relocated as a result of the creation of Lake Oahe.

Blackfoot (Moreau or Jim Town) is an early community located where Christian Mission was established in the late 1880s south of the Moreau River (Cudmore and Nelson 1984:28). The 1947 Corps of Engineers topographic map (Sheet 97) shows a small community on the Moreau River bottoms (now inundated) and the Ascension Church on the bluffs approximately 1.5 miles to the southeast. Mattison (1953:100) reports that the former is the location of the Moreau Community Center consisting of a day school, a Roman Catholic Church and several residences while the latter:

....was established by Bishop Hare in 1886-1887 and in 1889-1890 a chapel was built. At the present time, there is a white frame chapel and parsonage located there. The church is active. Nearby are several log Indian dwellings. Adjacent to the church is a large and active cemetery.

A manuscript describing the specifications of this church (Alexander Ascension) is available in the Bishop Hare Collection at the South Dakota State Historical Society (File 31, Manuscript 12). Although Mattison (1953:100) believed that the buildings at the Moreau Community Center were recent, it is not presently known which of these location corresponds to the early town of Blackfoot.

Other communities that developed in this general region but outside the project area include Robertson, Four Bear's Camp, Le Beau, Virginia and La Plant. It is assumed that this list reflects only those communities for which documentation is readily available and is not inclusive.

The Dawes Act

Until the Dawes Severalty Act was passed by Congress and signed into law by the President in 1887, the Sioux could maintain at least a semblance of a communal lifestyle even under the pressures of an Indian policy based on assimilation. The Dawes Severalty Act had very little to do with a real desire to improve reservation life, but was largely the product of western land speculation:

Humanitarians had long demanded that each Indian be given a farm, where the civilizing qualities supposedly inherent in tilling the soil could be readily absorbed. Because this goal could also be used to justify a sizeable reduction of the Indian land base, speculators joined reformers in supporting the Dawes Severalty Act in 1887. This law provided that each Indian family head would receive a patent for 160 acres of land, with lesser amounts going to other family members....After all Indians on a particular reservation had accepted allotments, the surplus land was to be opened for white settlement under provisions of the existing homestead laws [Lawson 1982a:33].

The application of the Dawes Severalty Act permanently disrupted the economic base of the reservation. Not only was the land partitioned into small, individually owned parcels but a total of 9 million acres were ceded prior to actual allotment and in contradiction of the procedure established under the Dawes Severalty Act and later became a part of the "Great Sioux Agreement" (Lawson 1982a:33).

The Great Sioux Agreement of 1889

Senator Dawes was also "the principal architect" of the Great Sioux Agreement.

The agreement provided that (1) the tribes would cede 11 million acres west of the Missouri River to the United States; (2) five reservations would be established on the remaining lands (Standing Rock, Cheyenne River, Lower Brule, Rosebud, and Pine Ridge); (3) the government would create a fund to provide individuals with farming equipment, supplies, and schools; and (4) each reservation eventually would be allotted among the people who lived there [Hoxie 1979:2].

The creation of the Cheyenne River Reservation as a recognizable administrative unit "blurred long-standing tribal distinctions....tribal members soon began to identify themselves according to their reservations" (Lawson 1982a:32). The creation of separate reservations also created additional government involvement. Government farmers were stationed at subagencies, more schools were built and the number of Indian police and courts increased. These changes were not immediate, but rather occurred over the next twenty years.

Wounded Knee

The events that culminated in the massacre at Wounded Knee have been described in Brown (1970). Sitting Bull was a threat as a "constant symbol of Indian resistance, a continual defender of the Indian culture..." (Brown 1970:427). The Ghost Dance was perceived by the agents of the U. S. Government as an unifying force through which Indian resistance might organize. Kicking Bear, who brought the Ghost Dance to Sitting Bull in 1890, was a Minneconjou from the Cheyenne River Agency.

By mid-November Ghost Dancing was so prevalent on the Sioux reservations that almost all other activities came to a halt. No pupils appeared at the schoolhouses, the trading stores were empty, no work was done on the little farms....At Cheyenne River, Big Foot's band increased to six hundred, mostly widows. When the agent tried to interfere, Big Foot took the dancers off the reservation to a sacred place on Deep Creek [Brown 1970:435-436].

General Miles believed that Sitting Bull was at fault for the disturbances associated with the Ghost Dance. Miles ordered Sitting Bull's arrest by the Indian police on December 12, 1890 (Brown 1970:437). On December 15, 1890 Sitting Bull was killed by the Indian policeman Red Tomahawk during the arrest (Brown 1970:438). The arrest and death of Sitting Bull took place at his home on the north bank of the Grand River. There were no retaliations after the death of Sitting Bull.

By the hundreds, however, the leaderless Hunkpapas fled from Standing Rock, seeking refuge in one of the Ghost Dance camps or with the last of the great chiefs, Red Cloud, at Pine Ridge. In the Moon when the Deer Shed Their Horns (December 17) about a hundred of these fleeing Hunkpapas reached Big Foot's Minneconjou camp near Cherry Creek. That same day the War Department issued orders for the arrest and imprisonment of Big Foot [Brown 1970:439-440].

Major Samuel Whitside and the Seventh U.S. Cavalry intercepted Big Foot and his band who were traveling to Pine Ridge on December 28, 1890. On December 24, 1890 Black Coyote accidentally or purposefully discharged his gun and:

...immediately the soldiers returned fire and indiscriminate killing followed....When the madness ended, Big Foot and more than half of his people were dead or seriously wounded; 153 were known dead, but many of the wounded crawled away to die afterward. One estimate placed the final total of dead at very nearly three hundred of the original 350 men, women, and children [Brown 1970:444].

Allotment

Allotment on the Cheyenne River Reservation under the provisions of the Dawes Severalty Act began in 1900. "Crews of surveyors worked methodically across the entire preserve. By 1909, they had made more than twenty-one hundred homestead assignments" (Hoxie 1979:7). In the same year almost all unallotted lands on the Cheyenne River Reservation were taken by the U. S. Government and opened to settlement (Schell 1975:255). The 1909 cession totaled approximately 1.6 million acres on the Standing Rock and Cheyenne River Reservations (Schell 1975:255).

Allotment of reservation land and the sale of the unallotted portions created a myriad of problems that continue to afflict the residents of reservations to the present time. Perhaps the largest of these problems is land fragmentation. Land fragmentation occurred as a result of the enforcement of partible inheritance.

The geometric growth of inherited interests in land allotments has led to the alienation and disuse of millions of acres of real property, and the burden of administering and probating the estates of what is now the fifth generation of heirs to the ten million acres of allotted land that remains in federal trust has become a bureaucratic nightmare without parallel [Lawson 1982b :213].

Between 1913 and 1920, the combination of allotment in severalty and competency commissions led to the impoverishment of many residents of the reservation. The competency commissions were formed under the Secretary of the Interior Franklin Knight Lane. The purpose of competency commissions was to interview every Native American holding an allotment to determine if the individual was competent to manage their own affairs and receive a patent to their allotment (McDonnell 1980:21). If the competency commission determined that an individual was competent they issued the fee simple patent with or without the individual's consent.

Because of the depressed conditions on the reservation, many of those who received fee simple patents immediately sold or leased their allotment to Euroamericans while others were simply cheated out of their title (Lawson 1982b; McDonnell 1980). This produced a checkerboard affect on the reservation and further depleted the land base available for the support of the population. Economic conditions on the reservation were further aggravated by an unsuccessful attempt in 1915 by Dewey County to tax the assets of allottees (Hoxie 1979:20-21).

The Cattle Industry

Two towns on the east bank of the Missouri, Evarts and Le Beau, had some effect on the economy of the Cheyenne River Reservation. Between 1900 and 1907 Evarts was one of the most active cattle shipment points in the nation (Hall 1954:355). This status was the result of an agreement between cattlemen holding title or leases to land along the Grand and Moreau rivers and the Cheyenne River Reservation to set aside "a six mile right-of-way along the northern edge of the Cheyenne River Reservation while the railroad company provided stockyards and dipping pens on the Missouri's west bank. The Indians received a total of twenty-five cents per head for all cattle and horses driven over the eighty-seven mile stretch across the reservation" (Schell 1975:251). A number of Cheyenne River Reservation Sioux worked as cowboys along the strip. Two sites, (39C0143 and 39C0144) both apparently belonging to prominent Sioux cattlemen, the Le Beau's, were identified during this inventory (see Chapter Seven)

Le Beau was founded by Antoine Le Beau about 1875 as a trading post (Hall 1954:310). Four Bear, a prominent Two Kettle leader, lived at Le Beau with his band prior to establishing the community known as Four Bear's Camp. "In 1883 the town was laid out, and by the end of the year had a population of 200, with stages running to Aberdeen, Blunt, and Bismarck....When the M. & St. L. reached the river a new Le Beau sprang up a little south and the original Le Beau gave way to the new" (Hall 1954:310). Le Beau was an important commerce center prior to its

relocation by the railroad. After its relocation, it was second only to Evarts as a cattle shipment point.

Two factors contributed to the decline of Evarts and Le Beau. One was the decision of the railroad to cross the river at Mobridge in 1906. The second factor was the closure of the open range as a result of the opening of the non-allotted portions of the reservation to homesteaders in 1909.

Tribal Government

In 1903 a 12-man business council was organized on the Cheyenne River Reservation to replace the general and executive councils that had operated since 1889 (Hoxie 1979:8). Four men from each district on the reservation were elected by that district's council. This business council determined how the reservation's money would be spent and how its land would be used. As Hoxie (1979:8) points out, "this new system allowed younger people to rise to positions of influence."

Citizenship

Citizenship was granted to all Native Americans in 1924 regardless of their trust status.

This gesture was made principally in recognition of the number of tribal members who had distinguished themselves in combat in World War I. Thus, fifty-six years after the black man and four years after all American women, Indians were officially recognized as citizens in their native land [Lawson 1982a:35].

Civilian Conservation Corps

The depression significantly worsened the already disastrous economic conditions on the reservation. In 1933 after the passage of the Civilian Conservation Corps (CCC) bill, a program aimed specifically at the Native American residing on the reservation was approved. This program, Indian Emergency Conservation Work (IECW) commonly known as the Indian CCC (CCC-ID) "allowed Native Americans to direct their own work in separate camps" (Bromert 1980:112).

No CCC-ID projects were identified in the project area during the 1986 inventory. However, it is known that a number of water development, irrigation and forestation projects did take place on the Cheyenne River Reservation (Bromert 1980:117).

Wheeler-Howard Act

The Wheeler-Howard Act or Indian Reorganization Act (IRA) radically changed the organization of the reservation and reservation government. Delegates to Congress from the Cheyenne River Reservation initially voted against the implementation of this act which reorganized tribal government, provided for new curricula in the schools and an Indian court, prohibited

allotment and returned surplus lands to the reservation (Bromert 1980:51-54). At the same time, the IRA also increased government supervision (Bromert 1980:56-57). A revised IRA was accepted by the Cheyenne River Reservation on October 27, 1934 (Bromert 1980:68). This final version of the IRA:

...established the concept of political self-determination for the tribes and permitted them to draw up constitutions providing limited powers of self-government. This law abolished the policy of land allotment and returned certain surplus lands to tribal control. It established a \$10 million revolving credit fund to assist reservation development programs, as well as an annual \$2 million appropriation for the purchase of new tribal lands [Lawson 1982a:36].

While the IRA provided for self-determination it also increased federal control and did little to extend the rights of either the tribes or the individuals. This lack of true self-determination and civil rights coupled with the increased federal involvement had significant impact on the course the tribe could take during the Pick-Sloan negotiations.

The Pick-Sloan Plan

The Pick-Sloan Plan was the combined Bureau of Reclamation and U.S. Army Corps of Engineers plan for flood control along the Missouri River and its tributaries.

The Pick-Sloan Plan was, without doubt, the single most destructive act ever perpetrated on any tribe by the United States. If it had simply been one act and had been committed only against the Sioux with the violation of only one treaty, it would be viewed as gross and unfair, but the projects eventually involved almost all tribes living on the Missouri and its major tributaries in the States of South Dakota, North Dakota, Montana, and Wyoming, and the end is still not in sight [Deloria 1982:xiv].

Within the boundaries of the Cheyenne River Indian Reservation 104,420 acres were inundated (Lawson 1982a:51). As a result, thirty percent of the reservation's population was relocated and tribal facilities and Bureau of Indian Affairs offices were moved from Cheyenne Agency to Eagle Butte. The Cheyenne River Sioux lost "their most valuable rangeland, most of their gardens and cultivated farm tracts, and nearly all of their timber, wild fruit, and wildlife resources (Lawson 1982b:50). The effect is one from which the inhabitants of the reservation may never recover.

Relocation of the agency headquarters...seriously disrupted governmental, medical, and educational services and facilities and dismantled the largest Indian communities on these reservations. Removal of churches, community centers, cemeteries, and shrines impaired social and religious life on all five reserves. Loss not only of primary fuel, food, and water resources but also of prime grazing land effectively destroyed the Indians' economic base. The thought of having to give up

their ancestral land, to which they were so closely wedded, caused severe psychological stress. The result was extreme confusion and hardship for tribal members [Lawson 1982a:29].

Impact of Oahe Dam on Historic Resources

Mattison (1953:6-7) recorded four historic properties within or immediately adjacent to the project area on the right bank of the Missouri River. The four recorded properties were the Sakakawea Monument, the October 7, 1804 Lewis and Clark campsite, the Moreau Community Center and the Ascension Church.

The Sakakawea Monument, located above the maximum pool elevation of Lake Oahe, is not within the boundaries of Corps of Engineers administered land. The October 7, 1804 Lewis and Clark campsite is listed by Mattison (1953:7) as a right bank location. However, based on the Lewis and Clark maps and journals, Moulton (1986:150) locates this camp on the east side of the river, very near the present site of Mobridge. This site was presumably quite ephemeral and was probably destroyed prior to the closure of Oahe Dam and subsequent inundations. The Moreau Community Center was moved prior to the inundation of the Moreau River floodplain and the Ascension Episcopal Church and cemetery are outside the Corps of Engineers administered area.

CHAPTER FIVE METHODS AND TECHNIQUES

Thomas K. Larson, Paul H. Sanders and Dori M. Penny

Research Orientation*

In considering a research design, it is essential to keep in mind the level of inventory to be undertaken as well as the overall management goal of such a project. Chronologies, interpretations of artifact function and discussions of cultural change and continuity within the Middle Missouri subarea have all been highly centered around excavations and not on surface inventories. Sites which have not been excavated are usually not considered in discussions concerning the distribution of variants, variation within traditions or temporal and spatial boundaries of cultural horizons (e.g., Lehmer 1971).

The primary goal of the research design proposed for the project is, therefore, quite different in that all archeological sites are utilized, regardless of type. In a sense, the design proposed addresses both research and management concerns about cultural resources along Lake Oahe. The proposed research will be aimed at gathering a concise body of data relating to the types of cultural resources present, the characteristics of the site setting in which each type occurs, the relationship of a site's location to its chances for long-term preservation as well as integrity and the utility of all of this information in predicting where buried cultural deposits may be exposed in the future.

The extant data from previous inventory work in the Middle Missouri subarea as well as other regions indicate that:

- 1) Prehistoric site and isolated find locales are extremely predictable when compared against locations not containing sites. Nearest neighbor discriminant and logistic regression analyses, for instance, have been found to be able to correctly predict site or nonsite occurrence with accuracies varying between 75 and 97 percent using environmental/location variables (Larson et al. 1986; Sanders et al. 1987).
- 2) Prehistoric sites consisting of small cultural material scatters and other areas containing only isolated finds on the surface often occur in settings similar to those of large occupation sites or at locales similar in setting to those containing buried cultural strata.

*Segments of this chapter have been adapted from Sanders et al. 1987 and Larson-Tibesar Associates' original proposal.

- 3) It is believed that the inability to view the shoreline of Lake Oahe during periods of low water has resulted in many cultural resources going unrecorded. While a large number of these resources are probably in a poor state of preservation, obtaining locational information on them would add greatly to the predictive power of existing settlement models for the region.
- 4) Investigations by other researchers (e.g., Bettis and Benn 1984; Sanders et al. 1987) have demonstrated that the mapping of Late-Wisconsinan and Holocene terrace systems aids in predicting both site distribution patterns and assessment of the potential for preservation of sites of various ages.

While this report will provide detailed descriptions of the cultural resources encountered during the inventory (see Chapters Six and Seven), it is also our intent to use this information to generate well founded recommendations for future research. This will include listing those sites which are being most rapidly destroyed by erosion and presenting predictions as to where undiscovered, buried cultural deposits are likely to be found in the future. Chapters Eight, Nine and Ten and Appendices A and B provide detailed information concerning the above research questions as well as other pertinent information involving the cultural resources within the project area.

Survey and Recording Techniques (See also, Historic Methods)

Inventory Techniques:

The total project area was inventoried by two crews each composed of the Project Supervisor or the crew chief and two to five additional crew members. Crew size varied in response to differences in the width of federal land. The basic survey methodology employed by Larson-Tibesar Associates utilized a series of parallel survey transects with crew members spaced approximately 30 meters apart. It is believed that maintaining spacing as close to the standard as possible provides the most consistent, controlled coverage of an area.

Recording of Sites and Isolated Finds:

Prehistoric cultural material observed during the inventory phase of the project were identified and recorded as either a site or isolated find. The distinction between site and isolated find was based on the density of surface materials, potential for buried cultural materials and the presence of cultural features. In general, a locality was recorded as a site if cultural features or buried cultural deposits were present or if the density of surface materials was greater than one item per approximately 3600 square meters. This corresponds to coverage of a 60 X 60 meter area. Once an item was located, the person finding the initial item as well as the adjacent personnel on either side in the transect line begin an intensive examination of the immediate area. Since the distinction between site and isolated find is often arbitrary, use of this type of approach allowed us to at least quantify our definitions as well as making the results comparable between areas or studies.

In addition, all cultural features are considered sites with the following exceptions: 1) contemporary transportation routes; 2) refuse deposits obviously associated with these routes (i.e. litter along active roads and trails); 3) fence lines and communication lines; and 4) contemporary recreational and/or hunting camps. Recreation debris located along Lake Oahe is expected to be the most prevalent. These exceptions are not considered as a site because they are not believed to contain significant information content for any areas of current historic or scientific investigation.

At each site, the minimal documentation procedures were as follows:

- 1) Intensive examination of the area by the entire crew.
- 2) At all sites, the location of all cultural features, artifacts and noted concentrations of artifactual materials were marked with pin flags.
- 3) The location of site boundaries, observed features and any collected cultural materials were mapped using a portable transit and stadia rod.
- 4) A datum marker was left at each recorded site. The location of this datum was tied into surrounding topographic features and Corps boundary markers, whenever possible.
- 5) All sites were photographed and appropriate South Dakota Archaeological Research Center site forms were completed. The location of all sites were plotted on field maps and transferred to clean copies for inclusion on site forms, available aerial photos and on-going project area maps.

Collection of cultural materials was restricted to those items believed to have temporally or culturally diagnostic potential and which were useful to the overall goals of this project. Collected materials will be curated at the South Dakota Archaeological Research Center in Rapid City. The location of all collected items were mapped prior to any collection to provide minimal loss of contextual information as a result of collection.

The procedures outlined above are aimed at gathering a body of comparable data from all sites recorded as economically as possible while providing an empirical background upon which statements of significance can be used.

Analysis

Aboriginal Cultural Material:

Aboriginal artifactual material was generally analyzed in the field and not collected. Table 6 illustrates the Larson-Tibesar coding format which was utilized for the recording of aboriginal artifacts and features. These same categories were encoded on the site mapping forms and into a

Table 6. Explanation of lithic coding.

MATERIAL TYPE	ARTIFACT TYPE	COMPLETENESS*
1. Knife River Flint	1. projectile point	Stone Tools:
2. Morrison quartz./gray Tongue River	2. biface	1. complete
3. yellow/red T.R.S.S.	3. end scraper	2. fragment
4. plate chalcedony	4. side scraper/ retouched flake	3. tip
5. Bijou Hills quartz.	5. utilized flake	4. midsection
10. coarse quartzite	6. mano	5. base
11. fossiliferous chert	7. metate	Debitage:
12. misc. chert	8. drill/graver	6. primary
13. misc. agate/chalcedony	9. core (non-utilized)	7. secondary
14. porcellanite	10. flake	8. tertiary
15. obsidian	11. hearth	Ceramics:
16. nonvolcanic glass	12. fire-cracked rock	21. cord roughened
17. petrified wood	13. stone circle	22. smooth/plain
20. sandstone	14. non-itemized lithic concentration	23. simple stamped
21. granite	15. bone (nonutilized)	24. check stamped
22. diorite	16. hammerstones	25. brushed
23. quartz crystal	17. chopper/chopping tool, utilized core tool, etc.	
30. fine-grained quartzite	18. bone tool	
	20. mound	
	21. depression (not historic)	
	22. ditch (not historic)	
	30. body sherd	
	31. rim sherd	
	40. feature in bank	

SIZE GRADE**

1. Less than or equal to $\frac{1}{4}$ inch
2. Greater than $\frac{1}{4}$ but less than or equal to $\frac{1}{2}$ inch
3. Greater than $\frac{1}{2}$ inch but less than or equal to 1 inch
4. Greater than 1 but less than or equal to 2 inches
5. Greater than 2 but less than or equal to 3 inches
6. Greater than 3 inches

* -- Completeness not coded for utilized flakes.

** -- Size grading based on greatest dimension of item.

computerized database used to generate site map legends, in the cataloging of collected artifacts, and in forming tabular summaries for the project.

Primary descriptive types for aboriginal materials utilized Lehmer (1954), Lehmer and Jones (1968), Hurt (1952), Johnson (1980), Ahler (1977a, 1977b), Stephenson (1971) and Neuman (1975). These and other pertinent sources were used as an aid in determining the chronological affiliation of investigated sites. The analysis of lithic source material is also considered important and was based on the material types presented in Ahler (1977b) (also see Sanders et al. 1987) with only minor modifications (see Table 6).

Historical Methods and Procedures:

As noted in Chapter One, archival research included consultation of numerous published and unpublished sources about the Lake Oahe region. Field recording included completing a South Dakota Archaeological Research Center site form which detailed the physical nature and setting of the site, physical nature and dimensions of the features and the nature of artifact remains. All historic sites were evaluated by Dori M. Penny, Historical Archeologist. The historic artifacts were not described in the same detail as the prehistoric artifacts due to the fact that no specific analyses of these materials were proposed. Rather, the historic artifactual materials were described as to function (e.g., bottle, jar, seam can, machinery, etc.), material type (glass, metal, ceramic, etc.) and where appropriate glass color (clear, brown, aqua, purple, etc.) and bottle manufacturing technique. The latter two characteristics are the most diagnostic as to the age of the particular item. The artifact descriptions aided in determining the age of a particular site as well as its function. However, as will be evident in Chapters Six and Seven, the lack of early historic remains (pre-1900s) on many of the historic habitations did not necessarily rule out the possibility of an earlier occupation. As a consequence, many of these sites were recommended for further work due to the presence of soil deposition and the possibility that earlier cultural remains were buried at the site. A site map was prepared and the general site area and selected features photographed. Collection of artifacts was limited to those items which may be diagnostic of the site's age or function, ethnic association, demographics, or former site occupants.

Site Patterning Analysis:

In order to examine site locational patterns the entire 1986 inventory area was divided into square units, each of which were 40 acres in size (i.e., 1320 feet, or 402 meters, on each side). These 40 acre units were arranged in a regular grid pattern. Thus, although each unit corresponds to a quarter-quarter of a standard 640 acre section, the units do not necessarily fit neatly into actual sections because of shifts in the township/range system and irregular size sections.

A total of 516 such sample units were utilized in the site patterning analysis. It should be noted that only a portion of each of the these 40 acre units may have actually been within the survey area. The acreage utilized in the site patterning studies is therefore considerably larger than the actual area inventory.

The centers of the sample units were used as the points from which a set of 11 environmental variables were measured. The definitions and techniques used to calculate the environmental variables are discussed in Chapter Nine.

The sample units were also coded for the presence or absence of cultural resources of various types. The spatial configuration of individual sites often resulted in their presence being noted in more than one sample unit. Additionally, a single sample unit was often found to have sites with more than one type of analytical component and/or more than one site. This resulted in a somewhat elaborate coding system for site type within the units. These types were selectively recoded during each statistical analysis procedure into simple presence/absence codes for the five types of analytical components considered: nonsite locations, earthlodge village locations, prehistoric artifact scatters, historic occupations, and woodland mounds.

Resultant data base for the 1986 study area has 516 records, each containing the following 13 variables:

- 1 STUDY UNIT NUMBER
- 2 DISTANCE TO MISSOURI RIVER
- 3 DISTANCE TO CLOSEST OTHER PERMANENT DRAINAGE
- 4 DISTANCE TO CLOSEST INTERMITTENT DRAINAGE
- 5 DISTANCE TO TIMBER
- 6 VIEW SPREAD AT ONE-QUARTER MILE
- 7 VIEW SPREAD AT ONE-HALF MILE
- 8 AVERAGE SLOPE
- 9 MAXIMUM SLOPE
- 10 AREA OF TIMBER WITHIN ONE MILE RADIUS
- 11 GEOLOGIC ZONE
- 12 GEOLOGIC DIVERSITY INDEX
- 13 SITE/NONSITE TYPE

All distance measurements are in meters and all area figures are in square meters. For Variable 11 (GEOLOGIC ZONE) the codes used are: 0 = ERODED BREAKS, 1 = Mt1, 2 = Mt4, 3 = Mt2, and 4 = Schamber (see Chapter Eight). For Variable 13 (TYPES) the following codes were utilized:

- 0 = NONSITE LOCATIONS
- 1 = EARTHLodge VILLAGE LOCATIONS
- 2 = PREHISTORIC ARTIFACT SCATTERS
- 3 = HISTORIC OCCUPATIONS
- 4 = WOODLAND MOUNDS
- 5 = BOTH PREHISTORIC ARTIFACT SCATTERS AND HISTORIC OCCUPATIONS
- 6 = BOTH EARTHLodge VILLAGE AND HISTORIC OCCUPATION
- 7 = BOTH MOUNDS AND EARTHLodge VILLAGE
- 8 = MOUNDS AND PREHISTORIC ARTIFACT SCATTER
- 9 = MOUNDS, PREHISTORIC ARTIFACT SCATTER, AND HISTORIC OCCUPATION
- 10 = EARTHLodge VILLAGE AND PREHISTORIC ARTIFACT SCATTER

Types 8, 9, and 10 were used only in cases where multiple sites were found within the same sample unit (i.e., no single sites were found with multiple components having the combinations listed in codes 8 through 10).

Historic isolated finds, historic material scatters, cemeteries/burials, an historic cairn, and a bridge were not incorporated into any of the sites types. These types were not used in site patterning analysis because their sample sizes were too small to analyze separately and they do not fit well into any of the other analytical categories. Prehistoric isolated finds are included within prehistoric artifact scatters (CODE 2).

Geoarcheological Investigations:

An integral part of this report is the investigation of the landforms along Oahe Reservoir. The geoarcheological investigations follows that conducted by Sanders et al. (1987) for the 1985 Corson County, Lake Oahe inventory and the study conducted by Bettis and Benn (1984) for a portion of the central Des Moines River valley in central Iowa. As Bettis and Benn (1984:211) point out:

Archaeological sites are deposits stemming from interaction between humans and their environment. Existence of cultural deposits is dependent upon a history of sedimentary, pedological, climatological, and biological changes. The central concern of this paper is the timing of sedimentary changes and their effects on the archaeological record. The basic contention is that existence of an archaeological record in an alluvial landscape is a dependent variable in the fluvial system. One therefore cannot logically conduct empirical studies of archaeological deposits independent of their broader sedimentary contexts. A proper evaluation of the archaeological record in the alluvial landscape entails imaginative, unconstructed investigations that cover broad landform/landscape areas. The intent of such investigations is to assemble and interpret data (site survey, landscape evolution modeling, site geomorphic context, radiocarbon assays) to reveal regularities in site context and patterning....When no attempt is made to place cultural resources in a temporal-physiographic context or to develop a landscape evolution model for a study area before and during the initial stage of archaeological field work, then it is not possible to assess the potential for preservation or nonpreservation of archaeological sites. Lacking a basic conception of the potential for site preservation, it is not possible to determine human settlement patterns or to formulate criteria of significance for known sites.

Several methods and techniques are necessary to assemble the information for use in defining site patterning and the geoarcheological potential of the soils in the project area. Initially the location of the sites is accomplished during the pedestrian survey. Examination of site content was conducted to determine the chronological affiliation of the site which can be used in the absence of radiocarbon dates. The use of relative ages for sites was used in conjunction with specific geoarchaeological studies to aid in determining landscape evolution and relative ages of terraces and soils along Lake Oahe.

In addition, the geoarcheological investigation will determine the distribution and description of the various soils of the project area. Descriptions of the relative depths and age of these soils will provide

information pertaining to the types and relative ages of sites which could be contained within these soils deposits. County soils maps (e.g., Kalvels and Boden 1979; Heil and Kempton n.d.) and surface geologic maps (South Dakota Geological Survey 1950, 1952) were used to aid in this investigation.

Specific methods used in the geoarcheological investigation included examining cutbank profiles for time-stratigraphic markers such as the Aggie Brown member of the Oahe Formation (Clayton et al. 1976), examining relative positioning and elevations of local terraces, collection of radiocarbon samples, description of representative profiles and the collection and analysis of selected soil samples. Representative profiles, especially those containing archeological sites, were selected and described to enable cross-correlation and formulation of depositional histories of the various soils within the project area.

The numerous cutbanks that have been exposed by Lake Oahe were used for stratigraphic profiles instead of the subsurface coring recommended by Bettis and Benn (1984). The cutbanks are actually a better indicator of the subsurface stratigraphy of a landform than coring because of the larger exposure which allows for a much more detailed examination of the landform's natural and cultural stratigraphy.

The use of information gathered from this investigation will provide the basis for determining the geomorphic context of archeological sites along the west bank of Lake Oahe. Relationships generated from such investigations could then be used to determine potential locations of similar-aged archeological deposits along adjacent areas of Lake Oahe, outside of the present project area.

Sample Survey

A 70 percent sample survey of the upper portions of the Moreau River is specified in the RFP. However, based on previous experience in conducting cultural resource inventories along the Missouri River bottomlands, we expected that approximately 30 percent of the area would consist of inundated areas of the Moreau River, past meanders of the Moreau River, marshes, oxbows and areas of waist-high vegetation. Rather than include these in the total population, it was believed that a more accurate and complete inventory could be accomplished by removing them from the sample universe and conducting a 100 percent inventory of the remaining areas. The elimination of these areas would, in effect, result in at least 70 percent of the upper portions of the Moreau River.

The actual areas subjected to an intensive pedestrian inventory are illustrated in Figure 3. The inventoried area is quite small due to the +record high lake levels during the spring of 1986 which inundated or silted in large portions of the upper Moreau River valley. We estimate that approximately 30 percent of the sample area was inventoried resulting in a total of approximately 10,500 acres for the project as a whole.

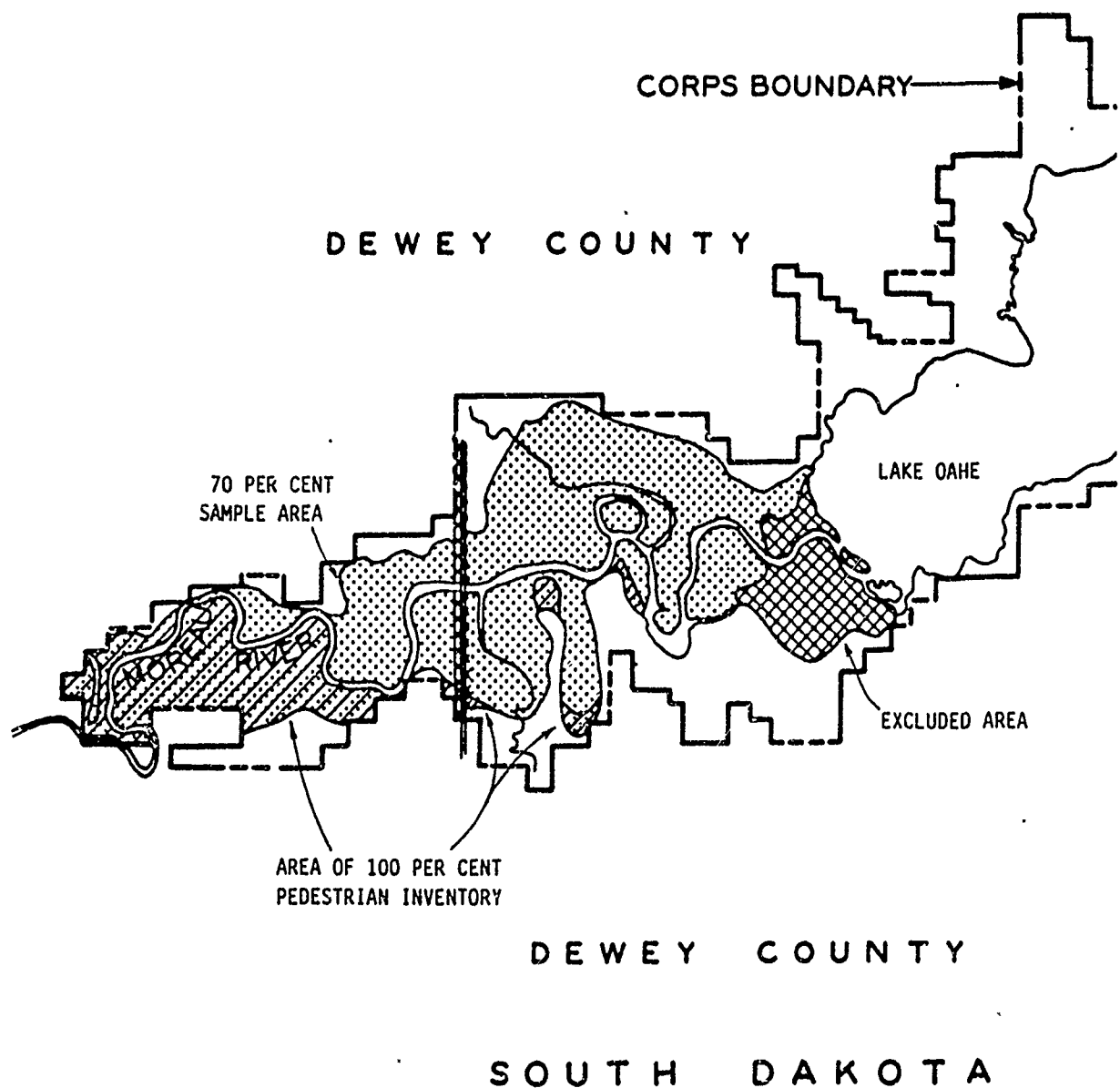


Figure 3. Location of inventoried areas within the 70 percent sample area.

CHAPTER SIX PREVIOUSLY RECORDED SITES

Paul H. Sanders

Introduction

The purpose of this section is to provide individual descriptions of each previously recorded site investigated during the 1986 cultural resource inventory. The following site descriptions present summary information on each site's contents, physical location, potential for additional cultural materials, recommendations and eligibility for nomination to the National Register of Historic Places. Additional information, such as legal locations, proximity to USACE boundaries, distance to water, land ownership, etc. are provided in Volume 2, Appendix C. Table 7 provides a list of the investigated sites.

Site Descriptions

39C019:

Potts Village is a partially fortified Extended Coalescent earthlodge village situated on a terrace near the mouth of Le Compte Creek. A historic artifact scatter is also present on the northwestern margin of the site area (see Figure 4). Overall cultural materials are scattered over an area measuring approximately 1200 m northwest-southeast by 100 m northeast-southwest. The site has been heavily impacted by wave action so that the site is comprised of large expanses of barren beach, woody areas which are occasionally inundated and the intact portions of the site with a dense covering of mixed prairie grasses. Surface visibility therefore varies between 10 and 100 percent depending upon the degree of impact and surface vegetation.

The site has been included within the Le Compte Focus of the Extended Coalescent variant (Johnson and Hoffman 1966). As noted previously (see Chapter Three), distinguishing characteristics are the ceramic assemblage, age and a village plan comprised of a large scatter of earthlodges and a small fortified area. When the site was visited by W. H. Over, he considered this pattern to represent two separate villages. He designated the fortified area as Potts Village (39C019) and the large scatter of earthlodges to the northwest as Le Compte Creek Village (39C020) (Sigstad and Sigstad 1973:42-43, 55). Later investigation by SIRBS personnel including R. C. Farrell and J. J. Hoffman in 1952 and R. L. Stephenson's major excavation in 1961 would support the conclusion that the site was basically one large village. Although an all-inclusive site number (39C043) was also assigned by the SIRBS to the site, site number 39C019 has been used most consistently in the literature.

Potts Village was one of a number of sites along the Missouri River selected for salvage excavations. As Stephenson (1971:13) states:

Table 7. List of investigated previously recorded sites.

<u>Site Number</u>	<u>Site Name</u>	<u>Description</u>	<u>Temporal Affiliation</u>
39C019	Pott's Village	Earthlodge village/ artifact scatter	Extended Coalescent/ Historic
39C0202		Earthlodge village	Plains Village
39DW1	Moreau River Village	Earthlodge village	Extended Coalescent
39DW35	Three Horse Site	Prehistoric artifact scatter and burial/ historic occupation	Late Paleoindian/ Plains Archaic/ Historic
39DW230	Fox Island Site	Earthlodge village	Extended Coalescent
39DW233	Swift Bird	Burial mounds/ earthlodge village	Sonota Complex/ Extended Coalescent
39DW234	Molstad Village	Earthlodge village	Extended Coalescent
39DW236		Earthlodge village	Extended Coalescent
39DW240	Grover Hand	Burial mounds/ artifact scatter	Sonota Complex/ Historic
39DW242	Stelzer	Occupation/artifact scatter	Sonota Complex/ Historic
39DW256		Burial mound(?)/ artifact scatter	Plains Woodland/ Extended Middle Missouri/Historic

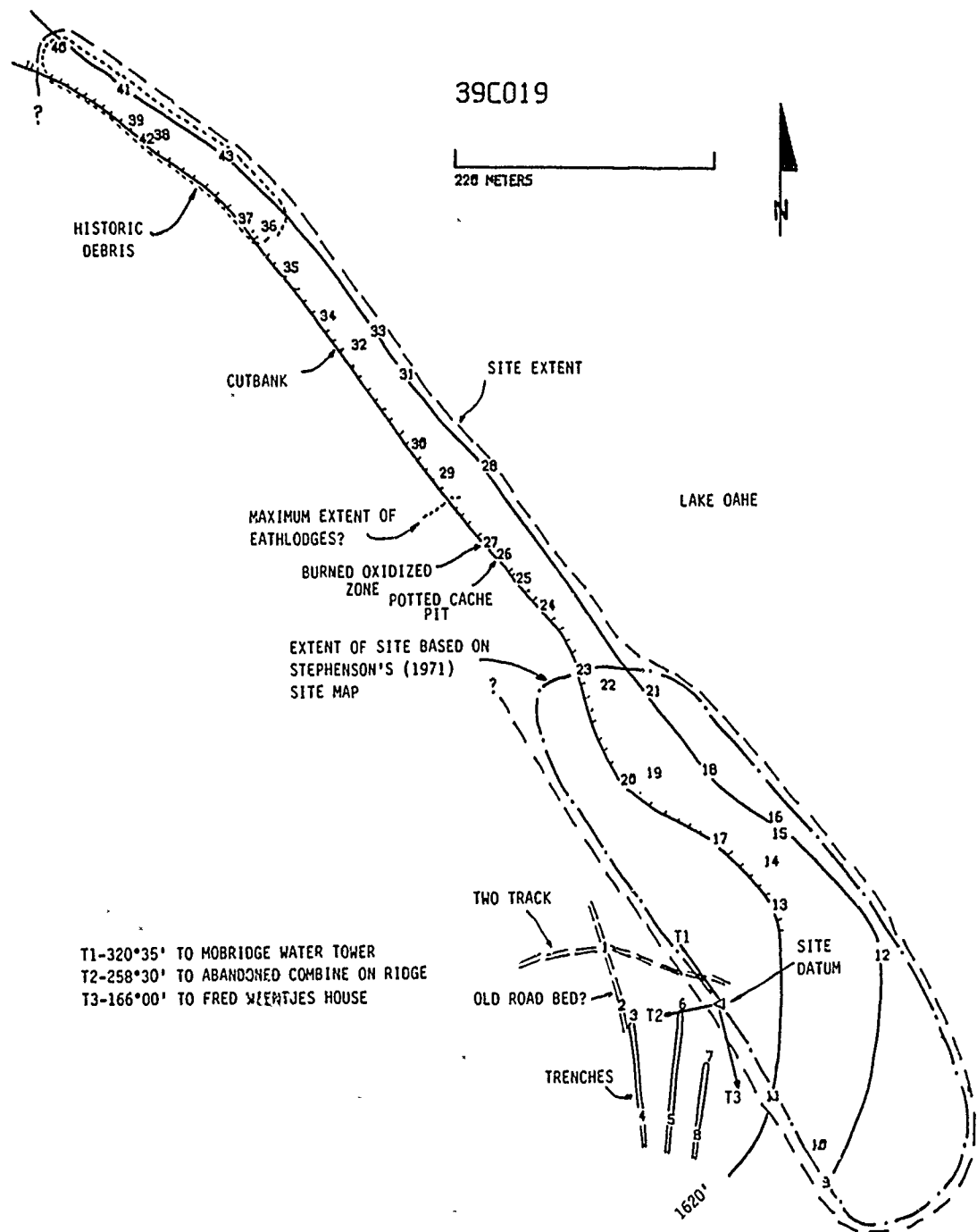


Figure 4. Map of 39C019.

The basic problems to be faced were: (1) to gain an understanding of the significance of a single, loop bastion on an oval fortification and the relationship of this style of fortification to other fortification styles in both time and space, (2) to learn what the other two interruptions in the fortification might be, (3) to excavate enough of the site to gain an understanding of the architectural features and the artifact styles and thus relate the site to others in the Middle Missouri River area, (4) to determine the relationship of the portion of the site within the fortified area to that outside the fortification.

The results of the excavation are presented in a detailed report (Stephenson 1971). A few selections from this report are presented below.

In a sense, this was a compound village consisting of two parts, though both represented but a single occupation. There was an oval area of approximately 1.6 acres surrounded by a palisade and a deep moat with a single, large, loop bastion and two or possibly three bastioned entrances. This fortified area contained at least 11 circular earthlodges randomly placed within the enclosure, one of which was larger than the others and apparently had been a ceremonial lodge. The fortified area also contained several outdoor storage pits and two open "plaza" areas.

The second part of the village lay outside the fortified area to the northwest along the terrace edge. Here some 35 to 40 circular earthlodges covered an area of approximately 15 acres. One of the lodges was noticeably larger than the others and presumably was a ceremonial lodge comparable to the largest lodge inside the fortified area. Scattered throughout the unfortified area were numerous storage pits and an occasional trash mound. Architectural evidence and artifactual remains from the two parts of the village differed in no significant way and strongly suggest that both parts of the village were occupied at the same time and by the same people. Both were parts of a single village

The artifacts strongly support the other data in clearly indicating a single occupation for the village and suggest no distinctions between the fortified area and the area outside the fortification. The pottery is more than 95% of the La Roche Pottery Tradition, a single ceramic style that has a real cultural cohesiveness. There are variations of decoration and rim form within this style but they are the kinds of variation that are expectable among individual potters in a single cultural group. They do not suggest the products of culture change through time nor the involvement of more than a single cultural group. The other 5% of the pottery is probably about one-third also of the same tradition consisting of a few sherds of somewhat aberrant characteristics. The remaining pottery is clearly of a different style and can only be considered as trade pottery from a contemporaneous culture complex elsewhere.

All but 6% of the projectile points are small, triangular specimens with or without side-notches and are so similar that one would not be surprised to learn that they had all been made

by a single artisan. There is but a single form of scapula hoe and the other scapula tools are knives and choppers made from fragments of this hoe style. Stone knives, scrapers, and choppers are less homogeneous but are the kinds of tools that are usually diverse in any specific culture complex, yet they, too, have no great diversity of style. Ground stone objects are not abundant and are predominantly abrading tools and hammerstones but grooved mauls are numerous and celts are present. Milling stones are entirely absent. Ornaments are few and diverse in style being made of both stone and shell. Catlinite tobacco pipes include a regular calumet form and disc form similar to those from the Utz Site and related Oneota sites in Missouri...Non-scapula bone and antler tools are of the usual range of styles found in most circular earthlodge sites in the Plains but include a few notable objects. These include socketed antler projectile points, a tenoned bone projectile point, bone fishhooks, and a bison frontal bone hoe. Except for the four ornaments all of the shell objects are scraping tools made from fresh water mussel shells [Stephenson 1971:80, 82-83].

One of the main goals of the 1986 investigation was to determine the published location and extent of Potts Village and compare it to the scattered cultural remains observed along the beach and cutbank. No house depressions or other features were visible on the ground which would have allowed an easy identification of Stephenson's site area. However, by overlaying Stephenson's (1971:Figure 1) map with the 1947 Corps of Engineers topographic map (Sheet 105) and 1981 Corps of Engineers aerial photograph (No. 153 09 17566 16 32), the 1986 site mapping was aligned with Stephenson's original site area (see Figure 4). As shown in this figure, most of Stephenson's site area has been destroyed through inundation or wave action. In addition, cultural materials were observed over a much larger area than Stephenson's original estimate of 1700 feet (518 m) northwest-southeast by 300 to 500 feet (91 to 152 m) northeast-southwest (1971:10). Some of this dispersion is probably due to the effects of wave action. However, cache pits and a 5 m long, 10 cm thick oxidized stain approximately 70 cm below ground surface (B.S.), possibly representing a burned earthlodge were exposed in the cutbank. These occur approximately 100 m northwest of Stephenson's estimated site boundary, which would suggest that some additional scattered earthlodges or other features could be present in the intact portion of the terrace.

Northwest of the oxidized layer, prehistoric cultural materials decline in frequency along the beach. To the southeast of this layer, large quantities of bone, burned rock, ceramics, chipped stone tools and debitage were observed. This particular area corresponds to the eroded portion of Potts Village and is a favorite locale for artifact collectors and pothunters.

Cultural materials collected during the 1986 inventory consist entirely of rim sherds. All of these were collected from the beach and are typical of the La Roche Pottery Tradition as defined by Stephenson (1971). Representative varieties are illustrated in Figure 5. No variation was noted between the ceramics collected from the various areas along the beach supporting Stephenson's view of a single site occupancy. It should be noted that the potential exists for a late Paleoindian component as Marion

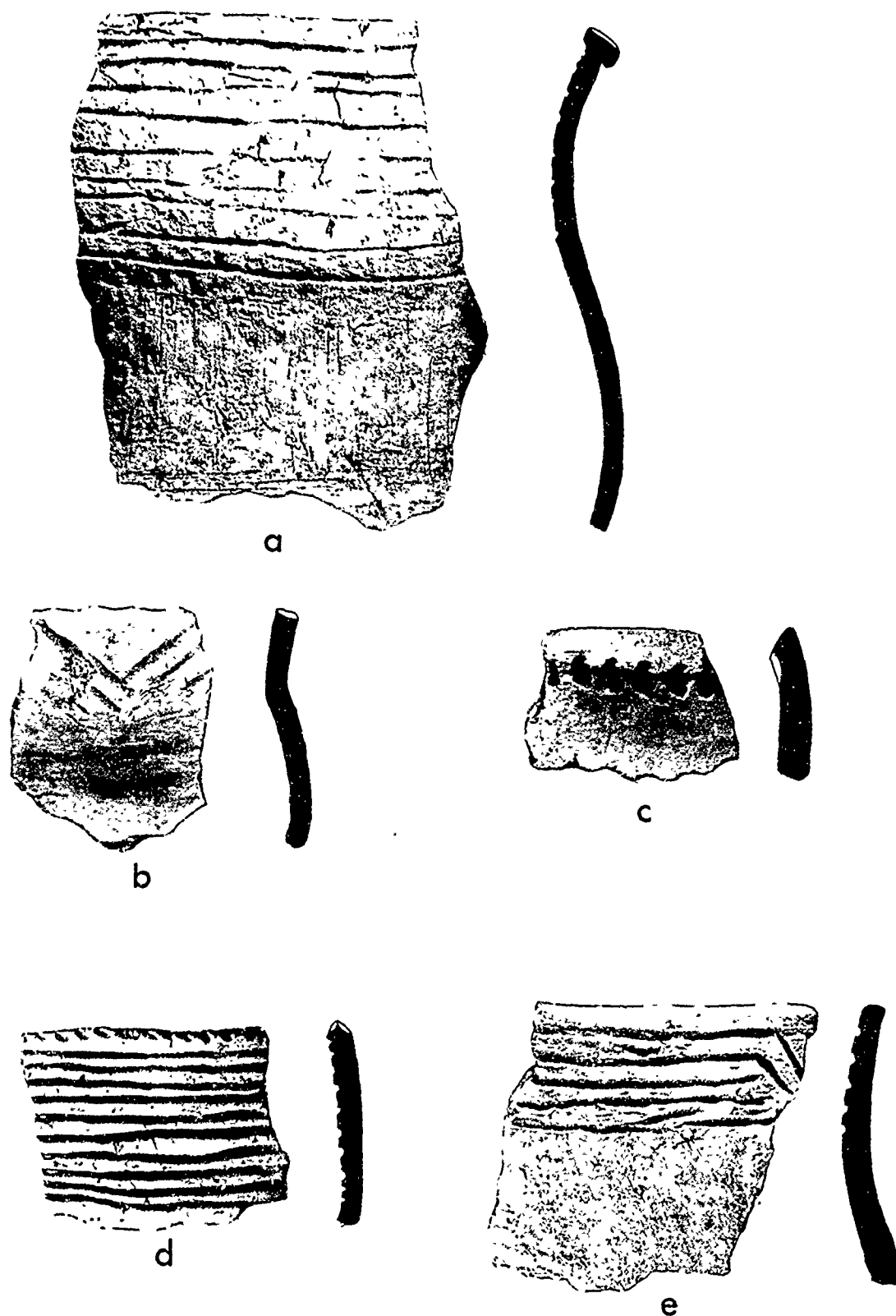


Figure 5. Rim sherds from 39C019: La Roche Incised "S" Rim (a,e), unclassified "S" rim (b), Talking Crow Straight Rim (?) (c), and La Roche Incised Straight Rim (d). All artifacts are actual size.

Travis collected a lanceolate projectile point from the beach "one quarter mile north of Potts Village" (Marion Travis, personal communication 1987). The point is similar in outline to the Agate Basin varieties but has parallel-oblique flaking, a characteristic of the points collected from Travis 2 (see Ahler et al. 1977).

Although much of Potts Village has been destroyed by wave action and has also been extensively excavated, additional significant information could be gathered from the remaining intact portions of the site. Some pertinent research questions are provided by Buechler (1984:51). Since considerable information has already been gathered by Stephenson (1971), additional data recovery should be oriented towards supplementing this information. Primary questions involve the need for additional chronological information such that the occupation at Potts Village can be compared with the other radiocarbon-dated sites of the Le Compte Focus as well as attempting to refine the Extended Coalescent occupation of the Grand-Moreau region especially in light of the early occupation (A.D. 1354) at 39C014 (Ahler 1975:82). Additional pertinent information concerns the collection of paleoenvironmental data in order to examine potential occupational correlations to climatic events (cf. Lehmer 1970). These and other questions can be addressed through additional data recovery. Based on this and the information already collected, the site should be considered eligible for nomination to the National Register of Historic Places. We recommend including this site in a noncontiguous district or thematic nomination with the other intact Le Compte sites, 39DW1 and 39DW234. Due to the destructive effects of wave action and pothunting these recommendations should be considered a high priority.

Along the northwestern portion of the site, the sparse scattering of prehistoric cultural materials overlaps with the remains of a historic occupation (see Figure 4). Two structures are shown in this general location on the 1947 Corps of Engineers topographic map (Sheet 105). However, wave action has destroyed these structures and spread the various cultural remains over approximately 200 m of beach.

Observed historic material include the remains of a concrete foundation, bottle glass, white stoneware ceramics, iron bed frame, metal toy airplane fragment, machinery parts, wire, thin aluminum pan, bone fragments and a rubber tire. The bottle glass was generally modern in manufacture and included the following colors: clear (dominant), aqua (mostly fruit jars, one with a lightning closure), amber and one piece of purple glass.

The chain of title search indicates that this part of the site was a part of Allotment 6 (Lots 6 and 7) issued as a trust patent on October 3, 1907 to Frank Le Compte. He held it until acquired by the U. S. Government in 1958.

The historic debris from the site indicates a relatively recent occupation which combined with the total lack of integrity suggests that little significant information could be gathered from this portion of the site. As a consequence the historic component is considered not eligible for nomination to the National Register of Historic Places.

39C0202:

This is the remains of a small earthlodge village recorded by the SIRBS in 1952. The site is situated on top of a large bluff which is bounded by Timber Creek, Le Compte Creek and the Missouri River. Most of the bluff top has been cultivated for at least 35 years while its edges are covered by dense mixed prairie grasses with a surface visibility of approximately five percent. The cultivated field had been tilled earlier in 1986, so that during the inventory, it was primarily covered with Russian thistle with a surface visibility of approximately 75 percent.

This site was originally observed on the 1938 Department of Agriculture aerial photos as consisting of four or five house rings (SIRBS site form, 1952, on file at the SDARC, Rapid City). However, when the site was visited in 1952 by R. C. Farrell and J. J. Hoffman with the SIRBS, the house rings had been obliterated by cultivation, although large quantities of cultural material were observed within the cornfield (see Figure 6). Observed items included ceramics, stone tools, flakes, bone and mussel shell fragments.

The site area was estimated by Farrell and Hoffman at approximately 25 by 150 feet (7.6 X 45.7 m) northwest to southeast. This area estimate appears to be a typographical error considering that four or five earthlodges were present and it is believed that the Farrell and Hoffman's estimate was meant to be in yards rather than feet. Stephenson (1971: Figure 2) depicts the site area as approximately 120 m northeast-southeast by 350 m northwest-southeast. Stephenson's (1971) estimate is based on a 1938 Department of Agriculture aerial photograph which clearly shows a linear arrangement of four or five lodge depressions. From overlying this photograph with current aerial and topographic maps, it is evident that the cultural material observed during the 1986 investigation is at the northwestern end of the site. The center of the site was covered with a dense growth of vegetation. The southeastern portion of the site was not investigated in 1986 as this area was clearly outside of the project area. However, it is likely that the latter area also contains additional cultural material exposed in the cultivated fields.

In the northern portion of the site, dense concentrations of cultural materials were noted in the plowed field, with a few items along the edge of the plowed field next to intact pasture. One area in the plowed field contains a wide, shallow pothole containing large quantities of pottery, flakes, bone, and fire-cracked rock. Other areas in the field also exhibited heavy concentrations of similar cultural material (including shell) with areas of lesser density between them. The dominance of Tongue River Silicified Sediment lithic artifacts and relatively thin-walled ceramics agree with Lehmer's (1971:Figure 77) assignment of the site to the Extended Coalescent variant.

Although the site has been subjected to cultivation for many years, the cultural material concentrations suggest the presence of additional intact buried cultural deposits. Test excavations would be necessary to determine if intact buried cultural deposits exist, their subsurface extent, integrity and cultural affiliation. As a result, the site should be considered potentially eligible for nomination to the National Register of Historic Places, however since nearly all of the site is privately

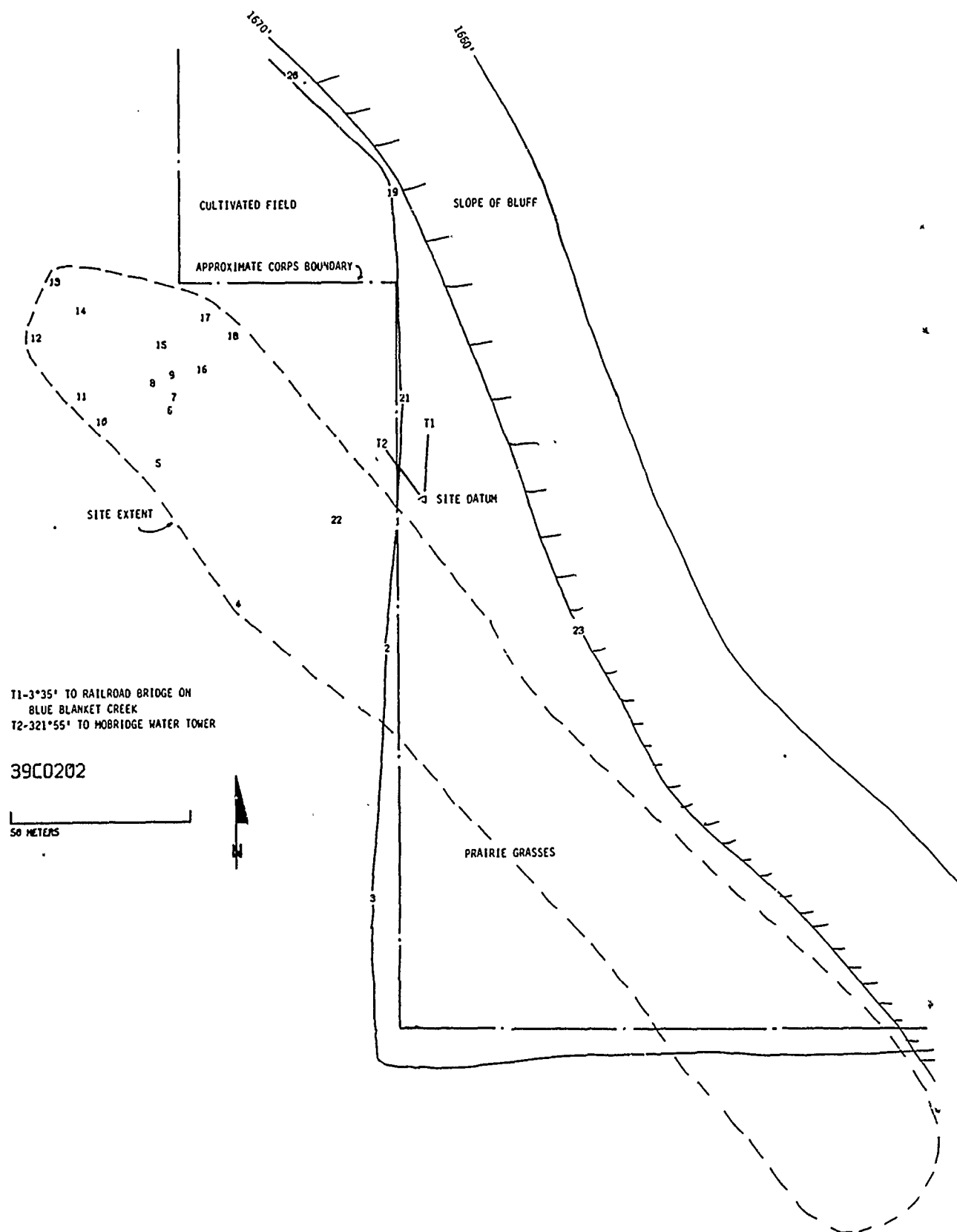


Figure 6. Map of 39C0202.

owned, the Corps of Engineers is obligated to conduct further work only on the control portion of the site.

39DW1:

This Extended Coalescent site is also known as the Moreau River Village, and is situated on a high bluff at the confluence of the Moreau and Missouri River valleys. The site is distinctive in the presence of a small fortified area with associated earthlodge depressions outside of it. The village was first recorded by W. H. Over, who thought the site should probably be called a double village site since he believed that due to their deteriorated condition, the lodge depressions located outside of the fortified area were older than those occurring within it (Sigstad and Sigstad 1973:81). Concerning this question the field notes of Oscar Mallory, who tested the site in 1963, states:

When I discussed this site with Dr. Alfred Bowers he mentioned seeing about 300 house depressions on the large flat north-west of the fortified area in...1929. Since then the flat has been cultivated and house depressions are no longer readily visible (SIRBS site forms on file at the South Dakota Archaeological Research Center, Rapid City).

Except for W. H. Over all other investigators have considered the site as being a single component.

The site was formally recorded in August, 1952 by R. L. Farrell and J. J. Hoffman with the SIRBS using information supplied by Over and from the examination of aerial photographs. They noted the presence of a large occupation area with a small pie-shaped fortification in the southeastern corner. Since the site is above the maximum pool elevation, they recommended that the site be excavated by South Dakota institutions.

The site was briefly visited by Robert L. Neuman with the SIRBS in July, 1963. He collected a few ceramics and a stone sample (SIRBS site form, on file at South Dakota Archaeological Research Center, Rapid City). A month later, Oscar Mallory also with the SIRBS excavated a 5 X 30 foot (1.5 X 9.1 m) trench (XU-1) through the fortification ditch and a 5 X 20 foot (1.5 X 6.1m) trench (XU-2) through a portion of a lodge depression. Excavation Unit 1 recovered a number of ceramic, bone, chipped stone tools and other stone fragments (SIRBS site form, on file at the South Dakota Archaeological Research Center, Rapid City). The fortification ditch was found to be approximately 5 feet (1.5 m) deep and 10 feet (3.0 m) wide.

Mallory's Excavation Unit 2 was excavated across the raised rim of his Depression 9 in order to obtain an artifact sample. The first 0.5 feet (0.15 m) was for the most part culturally sterile. The following 1.5 feet (0.45 m) consisted of cultural fill which overlaid the 0.3 foot (0.10 m) thick compacted floor level. Based on these excavations, the intact floors are approximately 2 feet (0.60 m) below the surface. Recovered cultural materials included ceramics, bone, charcoal, chipped stone tools and stone fragments. Another excavation unit (XU-3) was also excavated which recovered a rim sherd, bone and stone tools, but its provenience is not known.

The information collected by Mallory and earlier investigators was sufficient for Lehmer (1971:Figure 77) to assign the site to the Extended Coalescent variant. Lehmer (1971) based this assessment on Johnson and Hoffman's (1966) investigation of this and other nearby earthlodge villages similar in age, ceramic assemblage and village plan. These sites form the basis of the Le Compte Creek Focus (Johnson and Hoffman 1966; Lehmer 1971).

Additional test excavations were conducted in 1984 by Timothy Nowak, U. S. Army Corps of Engineers area archeologist (personal communication 1986). Nowak located Mallory's XU-1 and XU-2 as well as excavating four test units into three lodge depressions. One of the test units was placed in a depression outside of the fortification ditch. He also collected ceramics from the cultivated field north of the fortification ditch. Nowak reports that the ceramic assemblage of the two areas do not differ. However, he believes that the cultivation has destroyed the integrity of the occupation within this area. Nowak considers the intact portion of this site eligible for nomination to the National Register of Historic Places and a report and nomination form will be forthcoming from the Corps of Engineers, Pierre Office.

Due to Nowak's recent mapping and investigation of the fortified area, Larson-Tibesar Associates' investigation focused on areas primarily outside of the Nowak's area of study. Due to the presence of tall and thick corn and sunflower fields site mapping was prohibitive. Six collection transects varying between 356 and 200 m in length were placed within the cornfield to collect diagnostic artifacts (see Figure 7). Recovered specimens are illustrated in Figure 8. The ceramics are typical of the Extended Coalescent La Roche wares while the presence of an earlier occupation is indicated by the Late Archaic period Pelican Lake projectile point (cf. Reeves 1983: Figure 12, no. 16). Along the eastern edge of the site a burial was found approximately 50 cm B.S. in a cutbank formed by recent slumping. Emergency salvage excavation of the burial was conducted in the fall of 1986 by Timothy Nowak. Based on his findings, the burial was an infant bundle burial. The submission of some of the bone for a radiocarbon date did not yield enough carbon for a date (Timothy Nowak, personal communication 1987).

An examination of the edges of the bluff also located occasional exposures of bone, flakes, ceramics, and burned rock along its western edge. One rim sherd was collected and identified as Talking Crow Straight Rim (see Figure 8d) which is comparable to the rest of the ceramic assemblage from 39DW1. At this time it is not known if this area is actually a part of 39DW1, (see Figure 7, Map Number 19) but there appears to be a general scatter of cultural remains across the entire top of the bluff, resulting in a site area measuring approximately 600 m north-south by 800 m east-west. Although an intensive surface mapping would be necessary to demonstrate any breaks in the surface distribution of cultural material, the similarity in ceramics suggest the likelihood that the cultural materials along the western edge of the bluff are simply the remains of activities conducted outside of the village proper. As such, it should be considered a part of the earthlodge village and consequently should also be considered a contributing part of the eligible property.

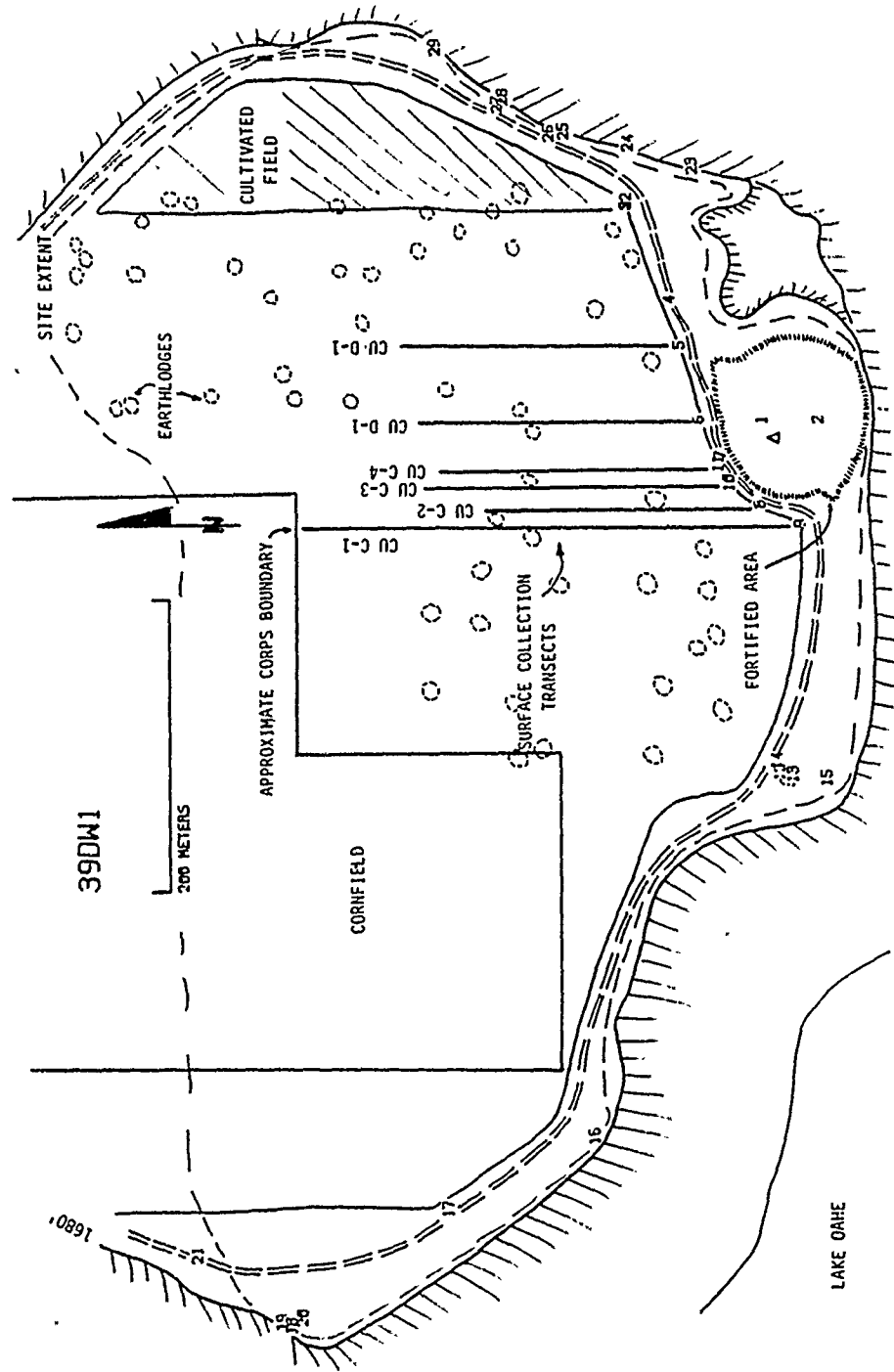


Figure 7. Map of 39DW1. Adapted from Johnson and Hoffman (1966:Plate 4).

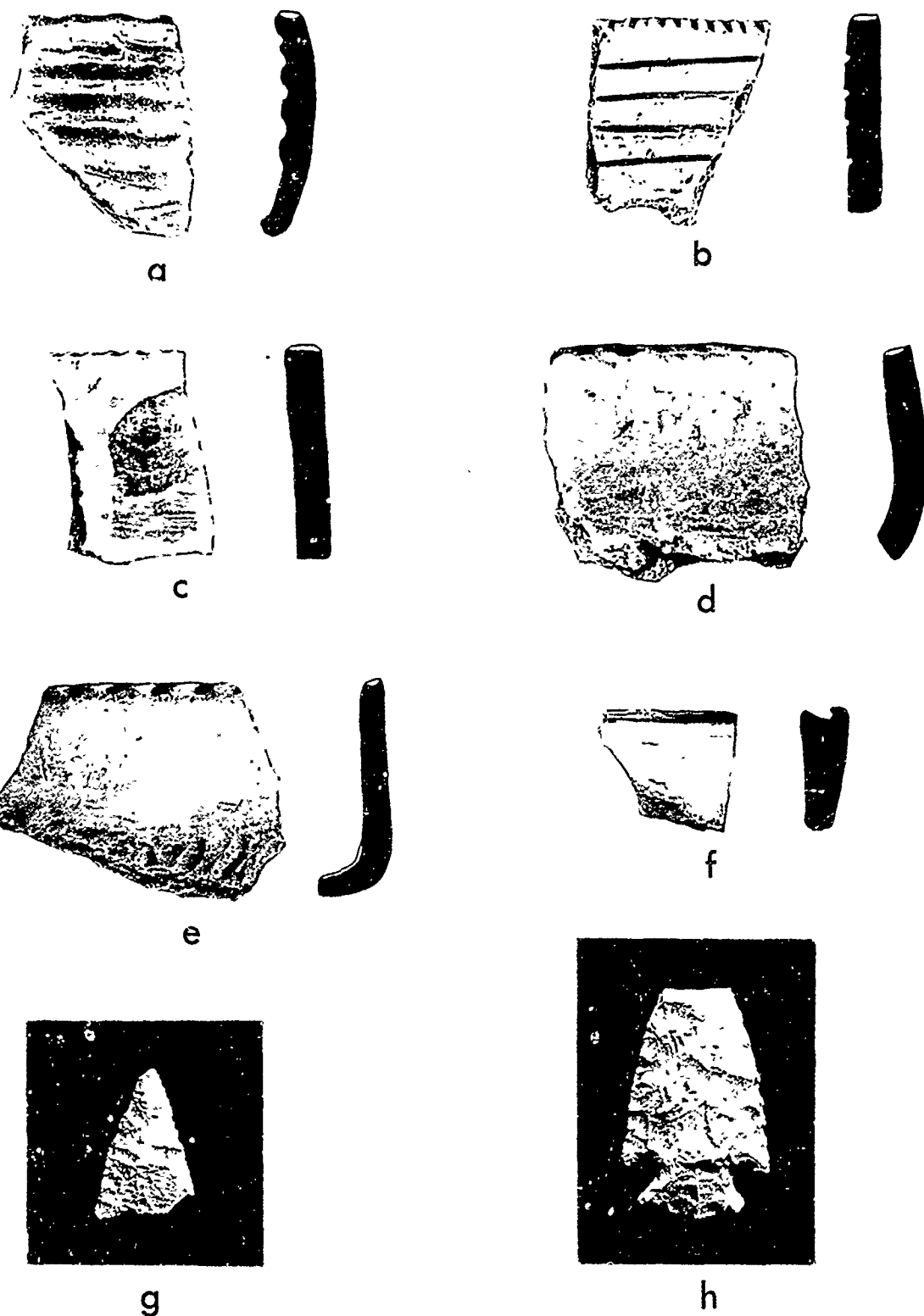


Figure 8. Artifacts from 39DW1: La Roche Incised Straight Rim (a-b), Talking Crow Straight Rim (c-e) unclassified rim with incised lip (f), unnotched triangular projectile point (g) and a Pelican Lake corner-notched projectile point (h). All artifacts are actual size.

39DW35:

This multiple component site, also known as the Three Horse site, is located on a high, grass-covered bluff near the confluence of the Moreau and Missouri rivers. The site was originally recorded in 1978 by Rebecca Boyd, USACE archeologist, (1979) as a result of an after-the-fact inventory of the construction area around a domestic water intake facility. Boyd (1979) recorded the site as consisting of lithic and human remains, most of which occurred along the edge and slope of a cutbank formed by the excavation of a borrow pit. In May 1979, the University of Nebraska, Division of Archeological Research was awarded a contract by the USACE to investigate the impacts to the site and assess any further mitigation actions. Falk and Pepperl (1980:12-15) state that:

Materials initially identified by Corps personnel were found along the north margin of the borrow area (Boyd 1979:2) Observed remains included seven pieces of chipped stone debris, a single core, one bilaterally edged block, and a thin, well-flaked elongate bifacial form. Minute traces of a red ochre-like substance were noted adhering to all specimens. Six of these items were manufactured from Knife River Flint while the remaining four are chalcedony. Human remains were also collected; these include left and right tibiae (diaphyses only) and a single left femur (diaphysis only)....

While further attempts to locate other evidence of cultural remains within the borrow area were unsuccessful, systematic inspection of the slopes and bench surface above the cutbank resulted in identification of a small scatter of surface debris. In addition to 27 individual surface material locations, 3 rectangular depressions were mapped.

Extensive hand probe tests along the edges and floor of each depression failed to produce evidence of cultural debris or structural remains. Two brick and 7 window glass fragments were noted scattered near these depressions and provided the only tentative suggestion of structural remains.

The surface scatter, comprised of chipped stone detritus, small bone fragments, historic ceramic remains, and glass and metal debris, was distributed over a total area of approximately 10,000 m² (ca. 2.5 acres). Most of these materials were concentrated along the eastern margin of the bench spur, however. With the exception of two locations, all chipped stone items and bone fragments were restricted to an area of 12x20m along the east of the bench. All but three historic items were recovered in close proximity to the observed depressions and were included within an area of 32x65m on the more westerly portion of the bench surface....

Subsurface testing was initiated through the excavation of two 1m² units located at 10 m intervals east and west of the permanent datum. This placement resulted in a test (unit 1) situated within the recorded surface concentration of chipped stone debris and a second test (unit 2) located in an area near the observed

depressions where no surface debris was recorded. These tests were oriented toward determining the presence of buried cultural remains and toward evaluating the need for further subsurface investigation....

Chipped stone debris was recovered from the sod level and upper two levels of test unit 1, while the remaining levels were sterile of cultural material. Cultural remains were noted in one of nine levels of test unit 2; historic glass fragments and a fragment of charred wood were recovered from level 2 (2-10 cm. s.d.)....

Based on the results of these tests, as well as the negative results obtained from the hand probe, further subsurface test excavation was not considered warranted.

Based on their surface and subsurface investigations, Falk and Pepperl (1980:16, 18) provided the following evaluation:

Human and lithic specimens observed in the borrow area by both field parties were thoroughly disturbed and clearly out of primary context. It is probable that human remains observed by the Corps personnel (three partial limb elements) and the single partial cranium recovered during the present investigation represent a single individual. Further, the association of lithic materials collected by the Corps and the human remains seems probable. Evidence of the original deposits which contained these remains is lacking, having been totally destroyed by construction of the domestic water intake structure. Evidence of additional cultural remains in the immediate area is also lacking.

Assessment of the cultural and temporal place of these remains is difficult. Three lines of evidence are relevant, however. Geologic evaluation (Appendix A) of the field setting suggests that observed materials may represent an intrusion into soft, possibly weathered bedrock or, alternately, the result of downslope movement. In either case no clear temporal association is evident.

Evaluation of the partial cranium is somewhat more suggestive. McWilliams (Appendix D) concludes that the specimen represents a male who was in his thirties and probably a member of an Archaic American Indian population. This evaluation is based on a tentatively reconstructed cranial index and certain aspects of specimen morphology. Evidence does suggest that the individual represented is not representative of Plains Village populations known for the period post-dating ca. A.D. 900.

Evaluation of the associated lithic materials collected by the Corps is also of interest. The large (length 69mm.) elongate bifacial form is similar to specimens recovered from pre-ceramic contexts at the Walth Bay and Travis 2 sites located to the north along the east shore of Lake Oahe (see Ahler et al. 1974; Ahler et al. 1977). Based on these admittedly tenuous arguments, it is

suggested that the human and associated lithic specimens uncovered in the borrow area represent probable use of the immediate area by an undefined Late Paleoindian or Plains Archaic period population.

At least two separate uses of the upper terrace surface have been documented. The initial use is represented by a thin scatter of chipped stone debris. These remains are limited to the eroding surface and upper 10 cm. of the western margin of the upper terrace. None of the materials recovered are considered diagnostic given present taxonomic and temporal period criteria. The observed materials do suggest, however, use of the upper bench surface by undefined Native American groups. The relationship between these materials and the remains exposed in the borrow area is unknown, though it is suggested that the borrow remains pre-date the lithic debris scatter. The probability that these latter surface materials represent activities associated with the numerous Plains Village period sites in the general area....can not be discounted.

A second and more recent use of the upper surface is documented by the three observed depressions and scatter of ceramic, metal, and glass debris. Extensive probing failed to reveal evidence of structural debris or features within the depressions. Recovered historic debris suggests a late nineteenth or early twentieth century use of the area. A single Ironstone footing (specimen 39DW35-29; see Appendix C) bears a maker's mark suggesting a manufacture date of between 1886-1891...and is consistent with this evaluation. It is suggested that these remains document late reservation period occupation and/or use of this high promontory.

The 1986 investigation relocated the three historic depressions noted by Falk and Pepperl (1980) and located two additional depressions (see Figure 9). Dense vegetation obscured the surface resulting in only approximately 10 percent surface visibility. No prehistoric artifacts were observed.

The five depressions range in size from 7 to 10 m in diameter and 0.5 to 1 m in depth. No structural remains are present in any of the depressions. Three of the depressions are near the edge of the bluff and in danger of being destroyed by slumping. None of the depressions are shown as structures on any GLO plats, 1947 Corps of Engineers map or 1968 USGS topographic quadrangles. However, one structure is located near the site on the 1947 Corps map and could be associated with the depressions (see Figure 9). Nothing was found at this location.

The chain of title search indicates that this land was a part of Allotment 102 and issued as a trust patent to Alice Groundhog on March 31, 1908. In 1945, it was then transferred to the Cheyenne River Sioux Tribe. Lucy Rice and William Promise obtained it on September 11, 1947 who held it until it was acquired by the U.S. Government in 1957 for the Lake Oahe take area.

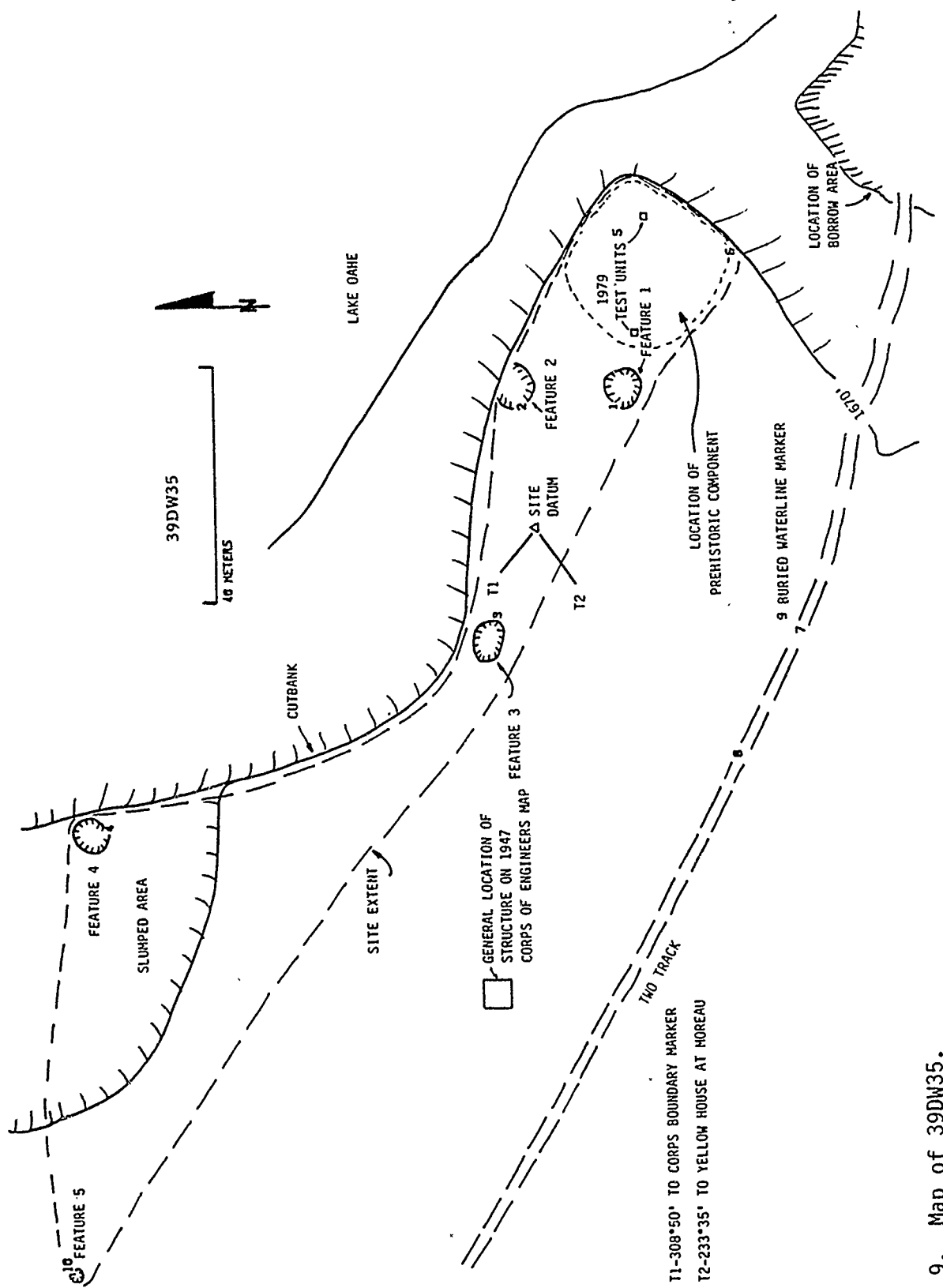


Figure 9. Map of 39DW35.

Falk and Pepperl (1980:19) do not consider the prehistoric materials in either the borrow area or the upper terrace as eligible due to the lack of integrity and lack of distinctive or diagnostic cultural material, respectively. Text excavations within and around the historic depressions failed to yield any substantial or diagnostic materials. As it appears unlikely that additional significant, buried cultural deposits are present, the historic component is also not considered eligible for nomination to the National Register of Historic Places.

39DW230:

This is the remains of the Fox Island Village situated on the lower slopes of a ridge next to Lake Oahe. The site area was covered by thick mixed prairie grasses with a surface visibility approximately 5 percent. The site area is essentially bounded on the east and south by small drainage valleys.

The present site area measures approximately 220 m northwest-southeast by 20 m northeast-southwest and contains two lodge depressions and a scattering of bone, burned rock, flakes, and ceramics along the cutbank (see Figure 10). The depressions are 10 and 12 meters in diameter and circular in outline. One La Roche Incised "S" Rim (cf. Stephenson 1971:Plate XVII) was recovered indicating an affiliation with the Extended Coalescent variant.

The site was originally recorded by R. C. Farrell and J. J. Hoffman with the SIRBS in 1952. At that time they estimated the site to contain 30 circular lodge depressions which covered an area approximately 300 by 50 m. No fortifications were noted but they thought the site unusual due to its location on a hillslope and recommended test excavation to determine house construction (SIRBS site forms, on file at the SDARC, Rapid City).

In 1963, Oscar Mallory mapped the site and excavated four test units. A large quantity of bone, ceramics, bone tools, chipped and ground stone tools and debitage were collected with most coming from the lodge depression. The field notes indicate that the majority of the cultural material was recovered from the 1-1.5 foot (30-45 cm) level. Mallory mapped 27 large and 19 small depressions which cover an area measuring approximately 450 m northwest-southeast and 100 m northeast-southwest. Only two depressions were found during the 1986 inventory and it is apparent that most of the site mapped by Mallory occurred to the east and south and has since fallen into Lake Oahe. The two depressions are located along the northern edge of the site and next to a small drainage valley. Although the location of these depressions do not correspond to any depressions mapped by Mallory, the lack of any prominent landmarks prevents an accurate overlay of the two maps. It is also possible that the two depressions recorded in 1986 were not mapped in by Mallory.

The information and cultural materials collected by Mallory should be analyzed and evaluated in order to determine the eligibility of the site and whether or not additional excavation is warranted. As a result, this site should be considered potentially eligible for nomination to the National Register of Historic Places.

39DW233:

The Swift Bird site consists of two burial mounds situated near the confluence of an intermittent drainage and the former channel of the Missouri River. The site area is presently covered by thick prairie grasses which has obscured the surface of the site, allowing only five percent surface visibility. Wave action has eroded the eastern edge of the terrace where the site is located exposing approximately two meters of loess. No cultural materials were observed within the cutbank or on the beach.

This site was originally recorded by R. C. Farrell and J. J. Hoffman on August 14, 1952 with the Smithsonian Institution River Basin Surveys. They described the site as containing two mounds and five house rings (depressions) west and north of the mounds and more houses 100 m to the east. The latter area has been eroded and no cultural materials were observed. An examination of Department of Interior 1938 aerial photograph (BNX 121 17) obtained from the National Archives failed to show the location of the house rings west and north of the mounds. As a result, it is not possible to accurately determine the site's extent, minimally it is 220 m north-south by 60 m east-west.

The site was reinvestigated in 1960-1962 by R. W. Neuman who excavated the two mounds. Both mounds contained burials associated with the Plains Woodland Tradition which radiocarbon dated at A.D. 125 \pm 120 and A.D. 350 \pm 100 (Neuman 1975:42, 45). The northernmost mound which Neuman (1975) designated "Mound 1" contained 13 individuals of all ages and sexes while Mound 2 held 32 individuals of various ages and sexes (1975:40,43). Few grave goods were directly associated with the individuals, however, the mound fill above the burial contained a diverse assortment of bison bone, ceramics, olivella shell, worked bone and chipped stone tools and debitage.

The 1986 investigation found two excavated mounds approximately 110 m apart and a possible depression 10 m north of the northern mound (see Figure 11). Since the mounds were never backfilled they are presently reminiscent of bomb craters. The depression observed during the 1986 investigation represents the one excavated by Neuman in 1962 and reported by Hoffman (1963:249):

The Swift Bird House was initially noted as one of several oval depressions close by the mounds. House 1 was investigated by excavation of 0.5 ft. levels to a total depth of 1.5 feet below surface while following the original outline of the depression. Also a small area immediately east of the depression was stripped in hopes of finding additional features.

Only a small amount of artifact material was recovered and structural evidence was sparse and uninformative. House 1 simply consisted of irregular posthole alignments, two firepits and a number of random postholes within the depression...

The paucity of structural remains prevents ready interpretation of the Swift Bird House. The oval depression does not necessarily indicate an oval or circular house; neither do the firepit and posthole patterns guarantee a definite house style.

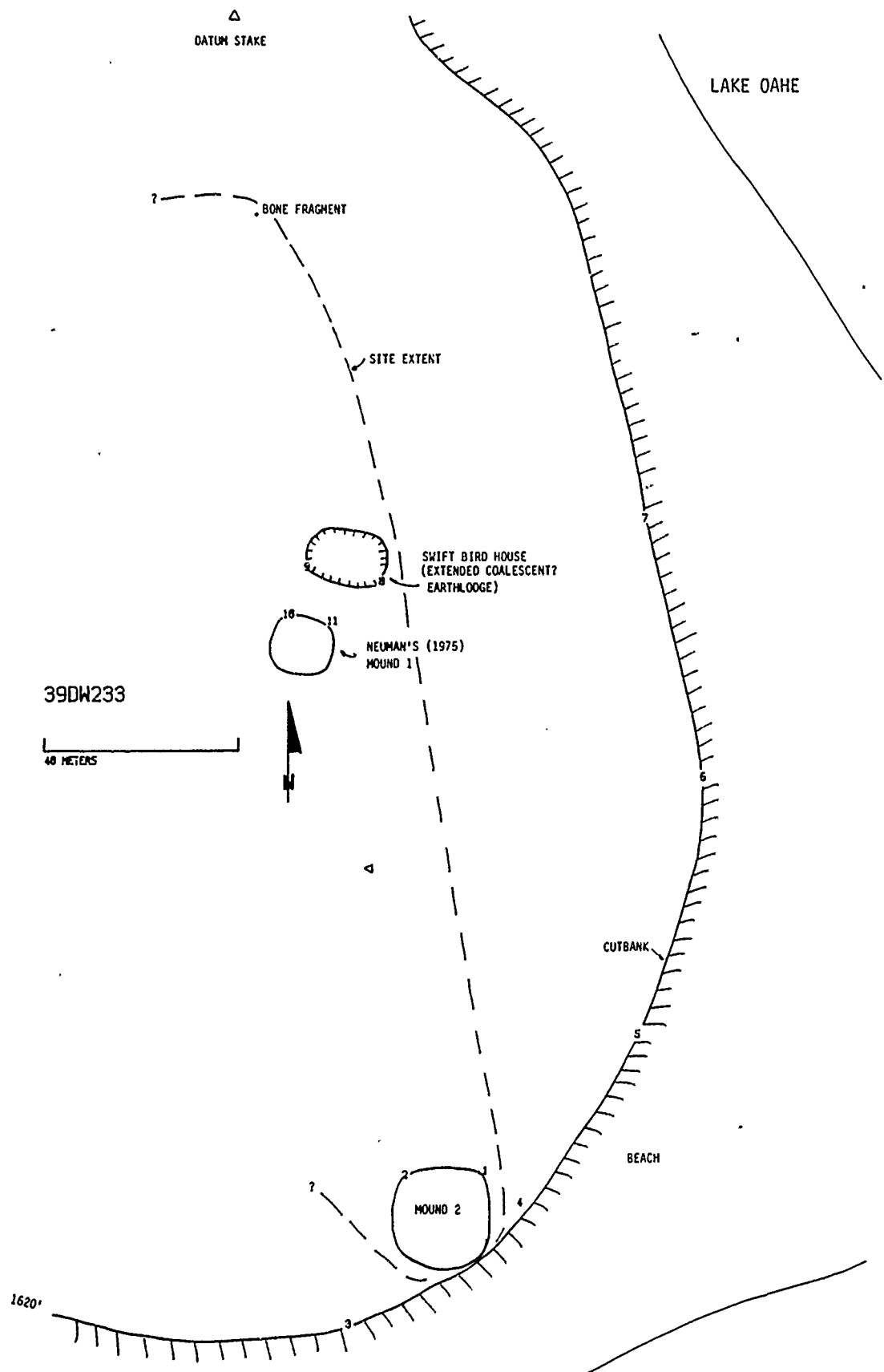


Figure 11. Map of 39DW233.

While the original form of the house can only be conjectural, it is worth noting that the accompanying artifacts are those usually found in circular houses similar to the historic, Plains earthlodge.

Hoffman (1963:253-254) suggests that the ceramics are most similar to those recovered from the Arzberger site (Spaulding 1956) which would place the site within the Initial Coalescent variant. Hoffman does note that some of the ceramics (e.g., Gray Cloud Horizontal Incised) are similar to but thicker than other horizontally incised varieties such as Wheeler, Iona and Nordvold (1963:252) which are presently considered to be diagnostic of the Extended Coalescent La Roche wares (see e.g., Hoffman 1967; Johnson 1980). The presence of Arzberger Horizontal Incised ceramics (see Hoffman 1963:Figure 2a) suggests the possibility that the houses at 39DW233 may be associated with a component which is earlier than the other Extended Coalescent villages of the area and could in fact be transitional between the Initial and Extended Coalescent variants. Radiocarbon dates and a reassessment of the ceramic assemblage are needed to address this question.

The dense vegetation present during the 1986 investigation prevented the location of the depressions or any additional cultural material which may have aided in determining the cultural affiliation of the site. However, given the general location of the house rings to the west and north of the mounds indicates that they may still be intact. This portion of the site has the potential to yield additional information on the prehistory of the region, especially in terms of a potential transitional form between the Initial and Extended Coalescent variants.

The Swift Bird mounds can be considered to have been completely excavated and retain little information content. However, the investigation of 39DW240 and 39DW256 recovered Plains Woodland occupational debris adjacent to the burial mounds suggesting that such an occupation area could also be present at 39DW233. A probable area for such an occupation would be to the north and west of the excavated mounds since no cultural material was observed on the beach or in the cutbanks to the east or south. The Swift Bird mounds have already contributed significant information as it is one of the type sites of the Sonota Complex. On this basis, as well as their potential to contribute additional information on the prehistory of the Northern Plains, the site should be considered eligible for nomination to the National Register of Historic Places.

39DW234:

This site is the remains of Molstad Village which was excavated by J. J. Hoffman of the SIRBS in June through August of 1962 (Hoffman 1967:2). This Extended Coalescent village is located on a flat terrace of the Missouri River. Wave action from Lake Oahe is eroding this terrace although the presence of Pierre Shale underlying the terrace loess deposits has slowed the rate of erosion. As a result, most of the site remains intact. However, cultivation of the southern portion of the site has exposed large quantities of bone, burned rock, ceramics, chipped stone tools and debitage. During the 1986 investigation surface visibility in the field was estimated at approximately 50 percent while the area of the site excavated by Hoffman was covered with a dense covering of mixed prairie grasses with only about five percent surface visibility. Scattered

bone fragments and two oxidized soil stains were exposed in the cutbank between 20 and 100 cm B.S. Only an occasional bone fragment was observed on the beach.

This site is shown on the 1894 Missouri River Commission map of the Missouri River and was mapped by W. D. Strong in 1932. W. H. Over also visited the site and called it Fox Creek Village which was later assigned the number 39DW11 by SIRBS based on aerial photographs. Hoffman (1967:2,4) further notes that:

The village was later cited by George F. Will in his "Archaeology of the Missouri Valley" and included in his "Grand River group of Arikara villages" (1924:310). The Molstad Site was first surveyed for the Missouri Basin Project in 1952 by W. R. Farrell and J. J. Hoffman. Reconnaissance and collecting was carried out in 1960 by R. W. Neuman, and airphotos of the site were taken in 1961 by Robert L. Stephenson as an additional part of Missouri Basin Project activities....

Observable surface phenomena at 39DW234, before excavation, consisted of six circular depressions surrounded by a narrow, circular ditch (Plate 1a). This complex was assumed to be a fortification containing house remains. In addition, another circular surface depression lay immediately west of, and outside, the ditch area. The surface of the area enclosed by the ditch was relatively undisturbed; the short grass apparently had never been plowed and no evidence of previous excavation was observed. The large circular depression west of the enclosure had been plowed at least once and, until recently, it was partially overlaid by a cattle corral.

Additional surface depressions of varying size and number were present along the terrace west and southwest of the ditch area. The depressions are evident in airphotos of the locale taken by the Agricultural Adjustment Administration during the drought years of 1938-39. These depressions are not evident in recent airphotos as a result of increased ground moisture and subsequent cultivation. During the summer of 1962 heavy vegetation covered the general area of the site. Thus, the additional surface features were neither located nor included in the investigations of 39DW234.

The focus of the 1986 investigation was primarily to determine site extent. Figure 12 illustrates the distribution of cultural material observed at the site. Much of these materials consist of various concentrations of bone, ceramics, burned rock and lithics which may correspond to lodge and/or midden features. These materials decrease in number towards the south with the overall distribution measuring approximately 450 m north-south by 150 m east-west.

Identifiable ceramics from the cultivated area are identical to those recovered from Hoffman's (1967) excavations. This information supports the assumption of a single village occupation and verifies the assignment of Molstad Village to the Le Compte focus of the Extended Coalescent variant proposed by Johnson and Hoffman (1966).

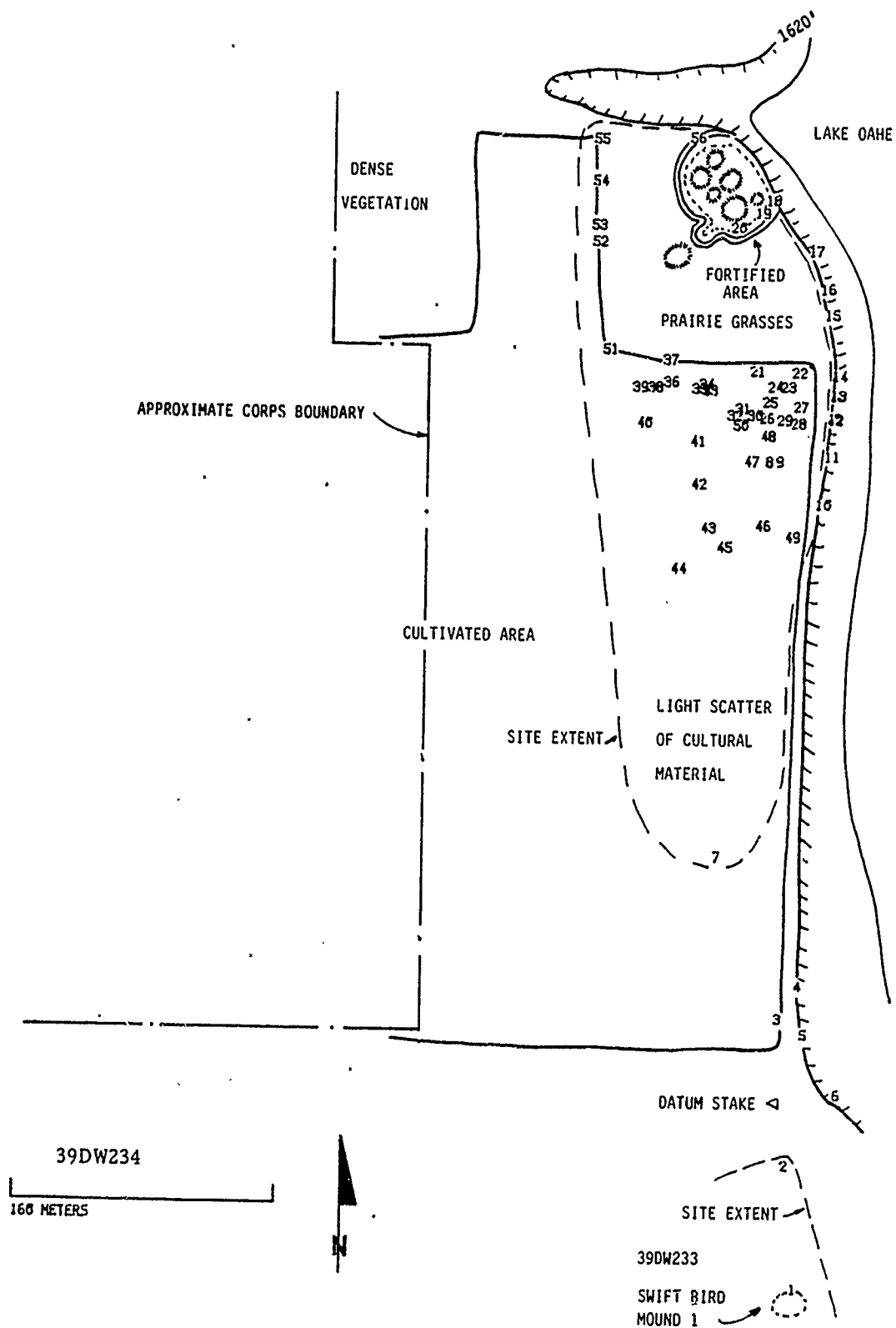


Figure 12. Map of 39DW234.

Molstad Village is on the National Register of Historic Places and listed as a National Historic Landmark. As a consequence, it is recommended that the site be preserved. The cultivation occurring on Corps land should be halted and returned to non-destructive use, such as native pasture.

39DW236:

This large Extended Coalescent earthlodge village is situated on a low, narrow terrace bounded by Le Compte Creek on the west and the Missouri River (now Lake Oahe) on the east. Most of the site area has been cultivated and the southern portion of the site was planted in corn during the 1986 investigation. Most of the observed cultural material is located in a harvested oats field which had a surface visibility of approximately 20 percent. The northern portion of the site is located in an undisturbed area of native mixed prairie grasses. Surface visibility in this area was estimated at less than 10 percent. A few small depressions are located in the grassy areas. A small scatter of bone, flakes and ceramics also occur in the ruts of a two track which passes through this area (See Figure 13). Based on these surface indications, the site is estimated at measuring approximately 900 m north-south by 350 m east-west.

The site was originally recorded by Paul L. Cooper of the SIRBS in 1953 based on apparent lodge depressions visible on a 1938 aerial photograph. The site was first visited in 1961 by S. H. Schwartz and L. G. Madison during R. L. Stephenson's excavation of Potts Village (39C019).

The cultivation has destroyed surface evidence of lodge depressions, although concentrations of bone, flakes, ceramics and burned rock are still present (see Figure 13). Two small 4 m diameter possible lodge depressions are present in the undisturbed northern portion of the site. The collected ceramic materials are all assignable to the La Roche wares as described by Stephenson (1971) indicating an affiliation with the Extended Coalescent variant (see Figure 14).

Test excavations are necessary to determine if intact cultural deposits occur below the plow zone, the nature of the depressions within the undisturbed northern portion of the site, the age of occupation and its relationship to the other unfortified and fortified earthlodge villages in the Grand-Moreau region. As a result, the site is considered potentially eligible for nomination to the National Register of Historic Places.

39DW240:

The Grover Hand site is one of the Sonota Complex burial mound sites excavated by Robert Neuman with the SIRBS in 1962 and 1963 (Neuman 1975). Grover Hand is situated on the lower slopes of a dissected terrace. Dense mixed prairie grasses occur over most of the site with surface visibility estimated between 0-5 percent. Wave action along the beach has exposed an apparent occupation area comprised of chipped stone tools, bone, ceramics, burned rock and debitage scattered along the beach. Surface visibility in this area varied between 80 and 100 percent (see Figure 15). Overall, the site measures approximately 380 m north-south by 300 m east-west.

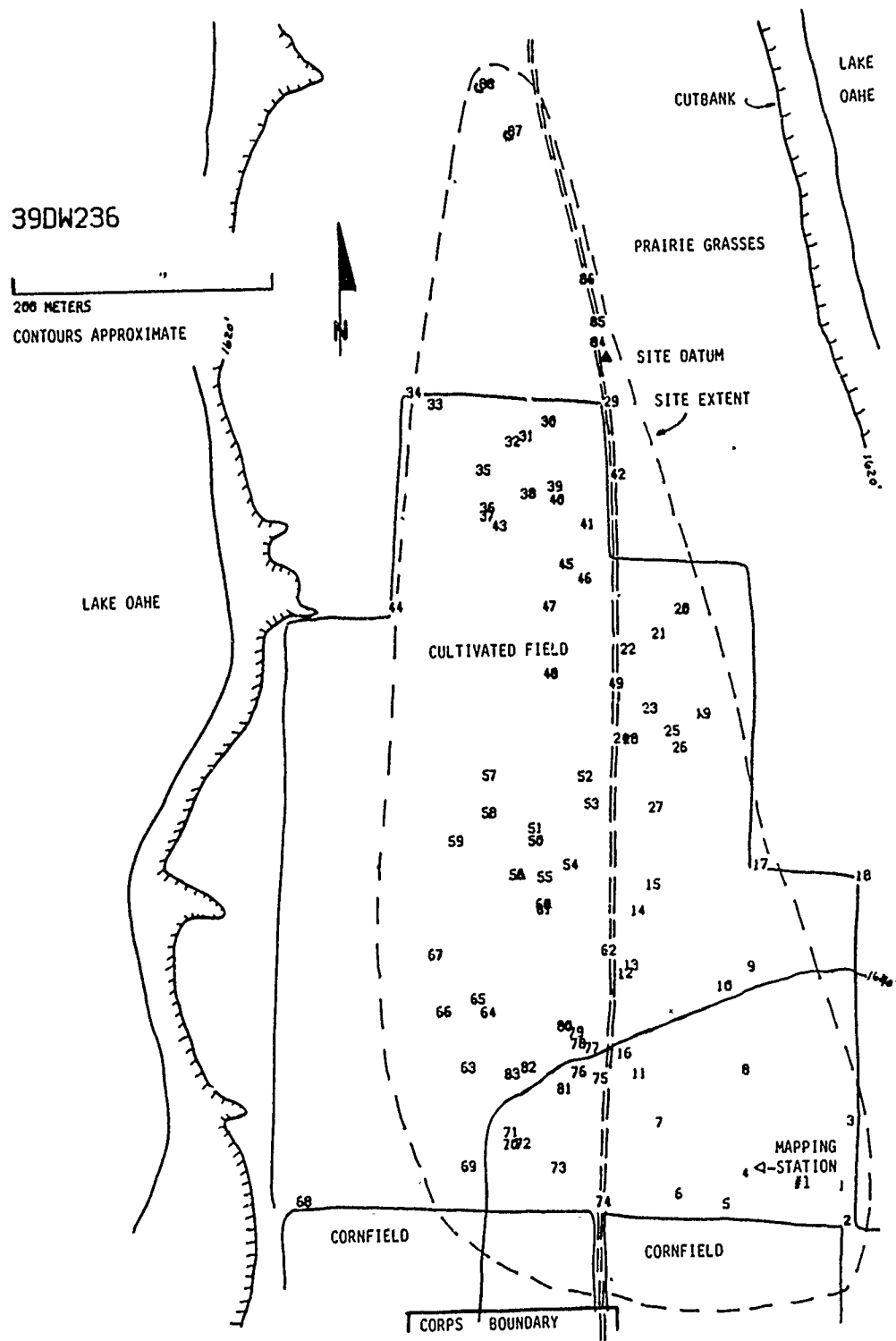


Figure 13. Map of 39DW236.

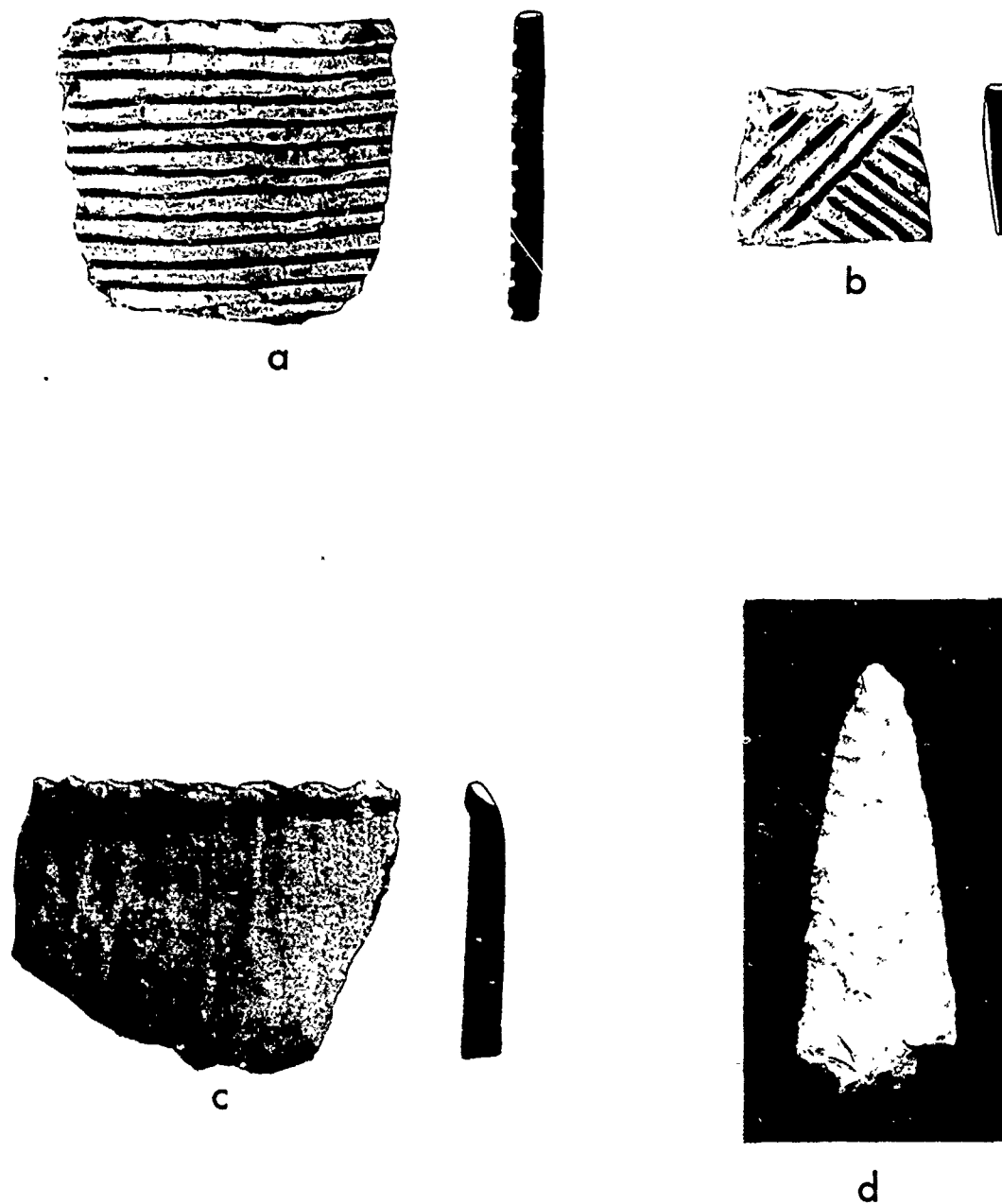


Figure 14. Artifacts from 39DW236: La Roche Incised Straight Rim (a), La Roche Incised "S" Rim (?) (b), La Roche Plain Straight Rim (c) and a possible quadrilateral knife (d). All artifacts are actual size.

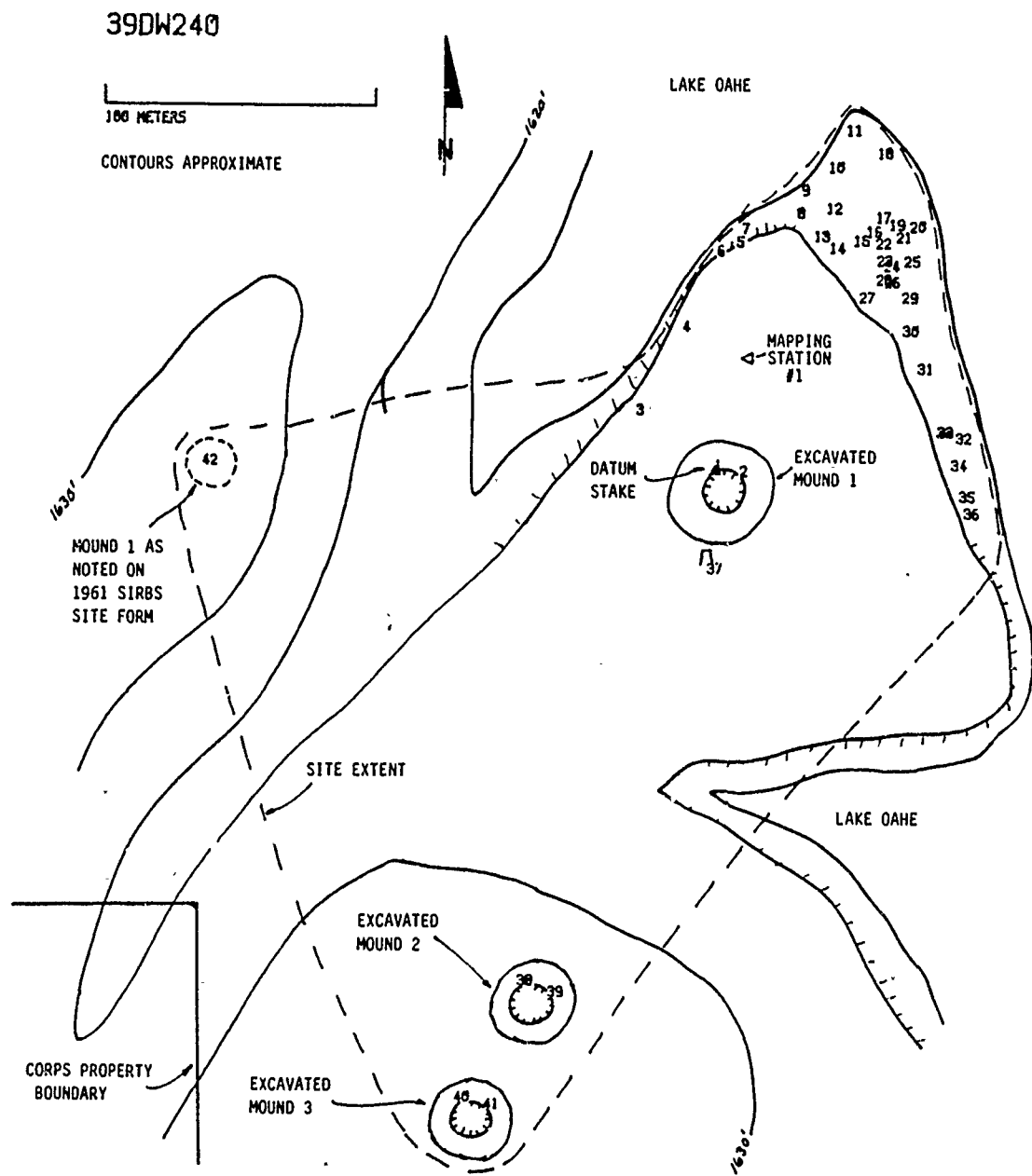


Figure 15. Map of 39DW240.

The site was originally recorded in 1961 by R. L. Stephenson during his reconnaissance of the area around 39C019. Stephenson's field map shows five mounds and four historic buildings on the northern edge of the site (SIRBS site form, 1961, on file at the SDARC, Rapid City). Neuman's map (1975:Figure 1) and discussion mention only four mounds and excluding Stephenson's westernmost mound. A low mound was found in this same area as Stephenson's western mound during the 1986 investigation although it is not very distinct and may be natural.

Neuman completely excavated three of the mounds which are still visible and resemble bomb craters since they were not back-filled. Each mound was comprised of a burial pit which contained numerous individuals of varying ages and sex. Articulations were uncommon suggesting secondary interment. The top of the pit was covered with wood poles and perhaps hides. Although few artifacts were placed with the individuals, the mound fill contains various other cultural materials, especially bison remains. Neuman's (1975:49-50) Mound 1 contained the most cultural items which are described below.

In the excavated area of Mound 1, we exposed two concentrations of bison remains manifested by articulated skeletons, articulated sections of axial skeletons, and individual bones of mature and immature animals. The largest concentration was on the mound floor adjacent to the west end of the burial pit. Here bison skeletal material was a piled array containing one complete skeleton, several axial skeleton sections, and at least two individual skulls. Also with this array were the skulls of a rabbit and a ground squirrel and several prairie dog jaw bones. Rather isolated in an area 10 feet to 15 feet directly south of the burial pit and within the upper portion of the mound fill was another bison-bone concentration, which consisted of an axial skeleton and an articulated section of rib cage. Additional animal bone within the fill or on the mound floor consisted of a bison skull...a meager number of bison phalanges, vertebrae and teeth, and the skull of a kangaroo rat.

Another feature of note within the mound fill was a vertically oriented, conical concentration of bone and hand-sized rocks (Feature 2), the base of which occupied an area 13.0 feet north-south and 5.0 feet east-west...The disturbance was first noted at 0.7 foot below the mound top and it expanded until reaching a depth of 3.9 feet. There were 225 fire-cracked rocks and 29 bone fragments. Most of the bones were from bison, but a few human, deer, or arctelope and skunk bones were present. Also associated with Feature 2 were a pottery rim sherd and the major portion of a grooved stone maul.

Still another peculiarity within the mound fill was a deep, vaguely basin-shaped concentration of burned earth and small, charred branches and twigs located between 1.7 feet and 3.8 feet below the top surface of the mound and directly above the burial pit. Interestingly enough, most of the charred sticks were oriented vertically to the ground surface.

During Neuman's excavation of the site, no excavations were conducted beyond the mounds. As noted above, large quantities of bone, flakes, burned rock and ceramics were observed on the beach indicating that the site was also utilized as a habitation. Collected artifacts include "Besant" points and a rim sherd (see Figure 16). Prior to the 1986 investigation, Stelzer (39DW242) was the only Sonota Complex site which contained evidence of a formal occupation. This no longer appears to be the case as both Grover Hand and 39DW256 contain burial mounds and associated occupational debris. On this basis, Swift Bird (39DW233) may also have an occupation area which has yet to be exposed.

The horizontal extent of the buried occupation level is not precisely known. Based on the present beach and cutbank exposures, most of the cultural materials are originating from the northeastern corner of the site around Neuman's (1975) Mound 1 (see Figure 15). Excavations within this area as well as around the other mounds are recommended in order to determine the extent and characteristics of this occupation level. Test excavation of the westernmost mound is also recommended in order to determine its origin and function. Although Grover Hand has already contributed significant information, additional areas of the site have been defined which have the potential to yield additional significant information. As a result, this site should be considered eligible for nomination to the National Register of Historic Places.

In addition to the prehistoric material, a scatter of historic debris is also present along the northern edge of the site. These remains are apparently related to a farmstead which shows up on both R. L. Stephenson's Grover Hand site form and the 1947 Corps of Engineers topographic map. Most of the farmstead is inundated and destroyed by wave action.

The historic artifacts found on the beach are farm-related and include a few bricks, several upright post butts, farm machinery parts, harness parts, nails, bottle glass, fruit jar and lid parts (clear with bedded screw-top and lightning finish), a pair of scissors, a fencing tool, a wrench, a wood rasp, an overall suspender fastener and miscellaneous debris. On the north edge of the point along the water line are concrete foundation fragments and an apparent dump area with machinery parts, stove parts, nails, bottles, an ice cream freezer crank, horseshoes, bone, a file, a metal faucet, a Catholic medal and miscellaneous debris. Bottles include an aqua Ball Ideal point fruit jar with July 14, 1908 patent date, lightning closure; a fluted panel Coca-Cola bottle with December 25, 1923 patent date and "Aberdeen, South Dakota" embossed on its base; an aqua Blatz Milwaukee beer bottle with crown closure; four clear 6 ounce ribbed Orange Crush bottles with July 20, 1920 patent dates and Mobridge, South Dakota on the three of the bases (the other was plain); an emerald green crown closure soda bottle with no embossed name and "27 5" on the base; a screw top white milk glass cold cream jar with no embossing; a clear unembossed pickle or olive jar with cork closure; the bottom of a large amber Clorox bottle; a clear round bottle with crown closure and no embossing; a round aqua bottle with crown closure and no embossing; a small clear fluted screw top mustard bottle with "IT'S FRENCH'S" on the shoulder and a design patent date of February 23, 1915 on the base; and two round clear bottles with fluted panels and crown tops of the same shape but one quart and the other 16 ounces. All bottles are machine made. The Catholic medal, embossed "I AM A CATHOLIC IN CASE OF ACCIDENT PLEASE NOTIFY A

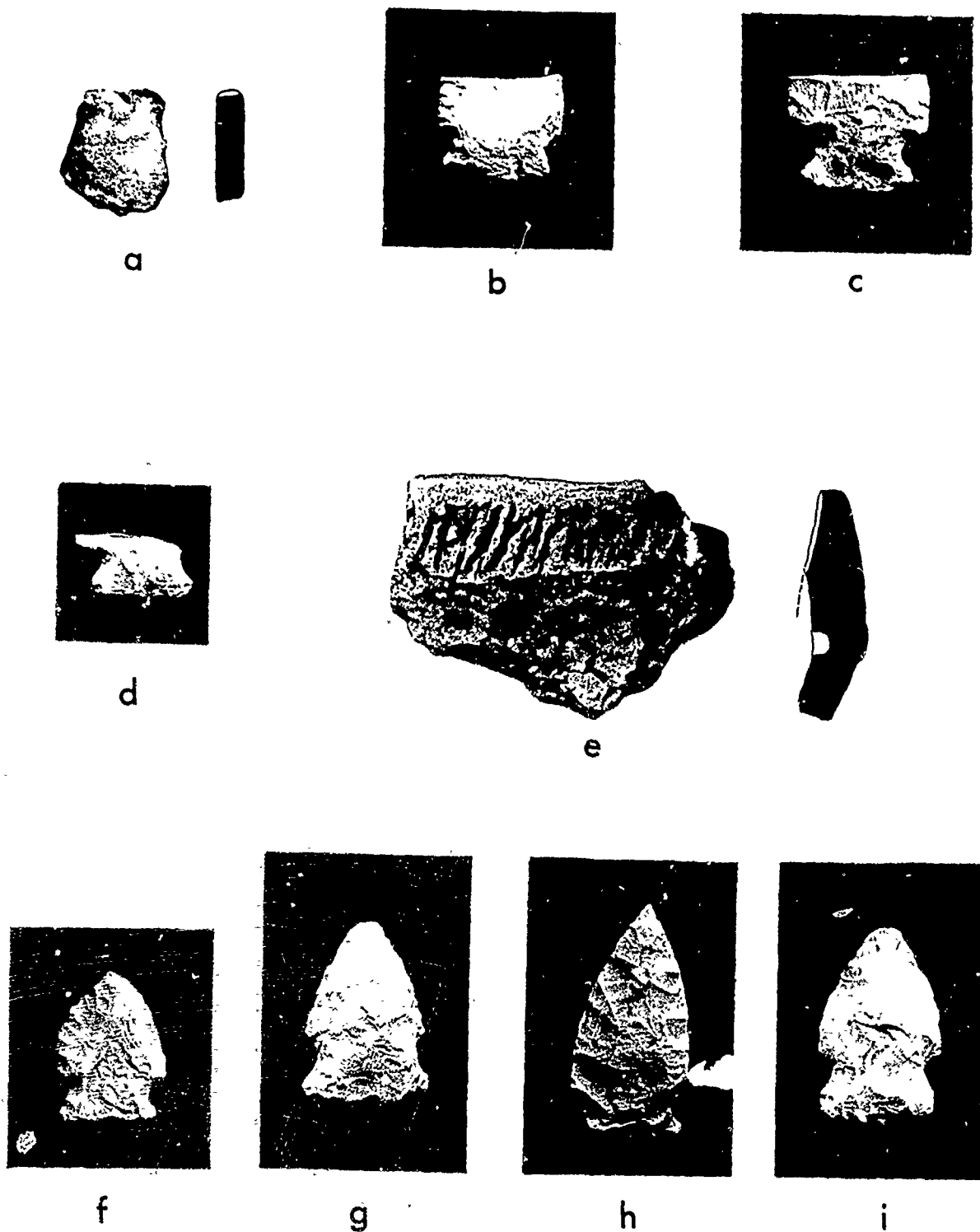


Figure 16. Artifacts from 39DW240 and 39DW242: an unclassified rim sherd (a) and points (b-d) from 39DW240 and a Scalp punctate rim sherd (e) and Besant projectile points (f-i) from 39DW242. All artifacts are actual size.

PRIEST" and a wheat backed copper penny (date obliterated) were collected from this site.

The chain of title search indicates that this land was a part of Allotment 52 issued as a trust patent to Ernest Halpin on April 19, 1918. He died on March 12, 1923 and left the land to numerous heirs, which was later acquired by the U. S. Government for the Lake Oahe take area in 1958.

The historic component of this site appears to retain very little integrity as a result of partial inundation and wave action. Therefore, the historic component of this site is not believed to be eligible for nomination to the National Register of Historic Places.

39DW242:

The Stelzer site was discovered in 1962 during R. L. Neuman's excavation of various neighboring Plains Woodland mound sites. Neuman (1975:3) provides the following description:

The existence of the subsurface cultural remains at this site, only 2 miles downstream from our field camp, was made known to me by William T. Stelzer, a crewman during the 1962 field season. The few pottery sherds and stone artifacts that he had removed from the eroding face of the river bank, less than 2 feet below the surface of the terrace bench, were indicative of a Woodland occupation and further examination of the area revealed that the occupational debris, though spotty, was exposed along the bank face for a considerable distance. The proximity of these deposits to the burial mound sites that I was currently excavating raised my hopes that it might be the camp area of the mound builders. Before the close of the 1962 season our investigations demonstrated that the Stelzer site was related culturally to the mounds, and for the first time on the northern plains, Woodland burial mounds were found in direct association with the camps of the people that constructed them....

Geographically it lies along a high, broad, flat bench above the river, and the flowing river waters below have cut the face of the bank, forming an almost vertical wall 80 feet high. The northern, or upstream, end of the site is bounded by one of the many large, steep-sided, erosional draws that begin as deep, narrow cracks on the slopes of the uplands and expand as they cut their way down through the terrace benches on to the river. The southern end of the site was never positively determined; however, the last real concentration of detritus was located 933 yards downstream. Nor was the exact breadth of the site ever really determined, although some archeological remains were recovered from a test 150 yards from the river bank and the farthest of five unexcavated, possible tumuli at the site is 546 yards from the bank. From this mound southwestward the ground begins its rather steep rise onto the upland plains with elevations of about 1,740 feet. Thus it would seem that the deposits at Stelzer, intermittent as they may be, encompass an area approximately 933 yards northwest-southeast and 546 yards northeast-southwest. The areal extent of this site, even if we

omit the five mounds which I am tentatively inferring to be tumuli of the same culture as the excavated mounds and campsite, is by far greater than any other Woodland site reported or known to me on the northern or central Great Plains.

The 1986 investigation found that most of the cultural material was exposed on the beach and that the eastern half of the site was underwater (see Figure 17). The majority of the cultural materials occurred along the northern portion of the beach in an area measuring approximately 300 m north-south by 80 m east-west. Additional cultural materials were found west of this main concentration exposed in the northwest-facing cutbank formed along the intermittent drainage valley on the northwestern boundary of the site.

Sonota Complex materials were found in large quantities and historic debris was also noted in fair numbers. The point on the north end of the site appears to contain intact deposits, with eroded materials on the beach extending approximately 600 m to the south. Buried bone was observed eroding out on the north side. On the point and the area of the point itself revealed an eroding hearth and a series of bone uprights. Prehistoric materials noted included ceramics, chipped stone, large amounts of bone, a notched (for hafting) cobble, and large quantities of debitage and fire-cracked rock. Representative collected artifacts are illustrated in Figure 16 and correspond to those recovered by Neuman (1975).

The presence of bone upright (see e.g., Neuman 1975:Plate 4) and a hearth remnant on the beach indicate that the occupational level at Stelzer is still at least partially intact. Above the beach additional intact buried cultural deposits are also likely given the exposure of bone within the northern cutbank at 20-35 cm B.S. The buried materials probably does not extend much more than 100 m west of the high water mark due to changes in the soil. A large prairie dog town is also present in this area and none of the burrows were found to contain evidence of cultural material.

Neuman (1975:Figure 1) depicts the location of several tumuli or mounds along the northern portion of the site. Overlying his map (which was derived from the 1947 Corps of Engineers topographic map [Sheet 103]) with the 1968 USGS Moreau NE topographic quadrangle shows that, except for the two westernmost mounds, all are underwater. The two intact mounds are shown to be located along a ridge to the west of the main occupation area. This ridge was found to contain numerous small mound-like areas but those noted by Neuman could not be positively identified as cultural and may support Neuman's belief that they could be natural.

In addition to the prehistoric component, considerable historic cultural materials were also noted. The historic materials also seem to be concentrated in the area of the point and include glass fragments, ceramics, and various metal items. All bottles observed appear to have hand-finished cork closures. Glass colors observed included purple, amber, clear and aqua. Metal items include nails (both wire and square), wire, a pitch fork, iron strap, hinges, screws, staples, bolts, horse bit fragments, harness fragments, machinery fragments, sheet metal, coil springs and unidentifiable pieces. Historic ceramics consist of crockery fragments and a few pieces of white stoneware. One area farther south on the beach had a cluster of nails that were all square, most of the nails in

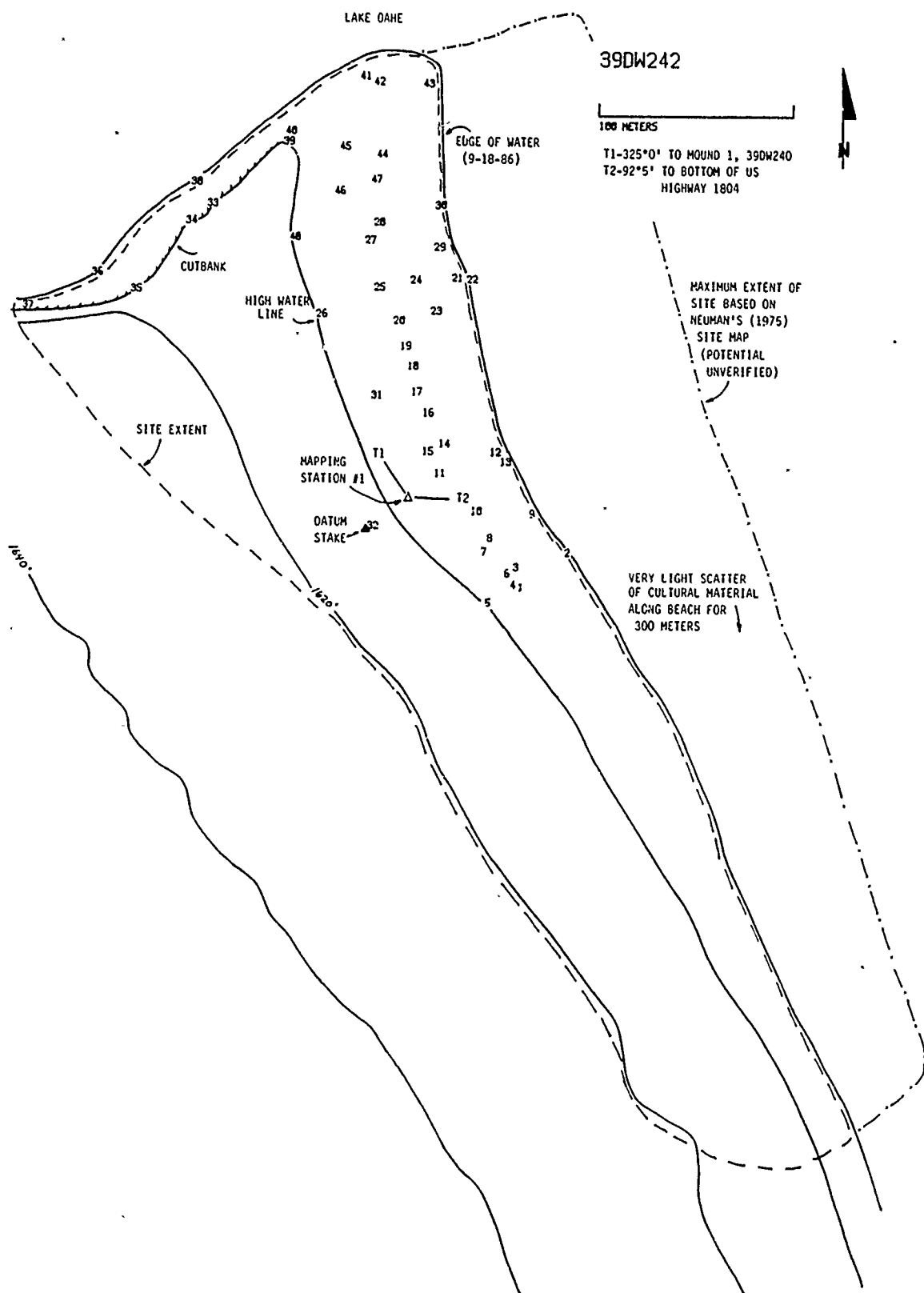


Figure 17. Map of 39DW242.

the area of the point were wire but a few square nails were present.

The chain of title search indicates that this land was a part of the same allotment as described for 39DW240. The historic materials occur on the surface of the prehistoric component and appear to be the scattered remains of a trash dump. These materials lack integrity or any associational qualities which may have warranted additional work. As a result, the historic component is not considered eligible for nomination to the National Register of Historic Places.

The prehistoric component is considered eligible based on its demonstrated contribution to the knowledge of the Plains Woodland period and its ability to contribute additional information. Mitigation or preservation is a high priority due to the increasing impact due to inundated wave action. Fencing to prevent cattle from further trampling the site is also recommended.

39DW256:

This site consists of a large artifact scatter situated at the end of a narrow ridge or terrace between two intermittent drainages. The site was originally recorded by Oscar Mallory of the Smithsonian Institution River Basin Surveys in April 28, 1965. At that time, the site consisted of a single mound approximately 30 feet in diameter and 1.5 feet in height which Mallory considered to be related to the other Plains Woodland sites in the area (i.e., Swift Bird, Grover Hand, etc.).

The 1986 investigation of the site found that wave action had exposed additional cultural material mainly to the east of the location of the possible mound (see Figure 18). However, the location of the latter is approximately 75 m south of Mallory's site location, therefore, it is not known if the possible mound located during the present investigation is in fact the one noted by Mallory.

Cultural materials at the site indicate that three components are present, representing Plains Woodland, Plains Village and a historic occupation. Most of the cultural material appears to be related to the Plains Woodland occupation and includes ceramics, projectile points, bifaces, scrapers, retouched and utilized flakes, bone, fire-cracked rock and debitage. Identifiable rim sherds are cord roughened with punctates, resembling those recovered from the Stelzer site (see e.g., Neuman 1975:Plate 5g), indicating an association with the Sonota Complex. The projectile points are large side-notched varieties generally referable to Besant types (see Figure 19). Knife River flint is the dominant raw material type. Most of the cultural material occurs on the beach of Lake Oahe, however one hearth containing burned rock and bone was observed in the cutbank. It is not known if the intact portions of the site contain additional buried cultural deposits since these areas were covered by a dense cover of prairies grasses.

The Plains Village component is represented by the presence of a few ceramics that are reminiscent of Riggs and Fort Yates wares indicating a probable Extended Middle Missouri affiliation (see Figure 19). It is possible that these materials were originally derived from a Plains Village site located approximately 200 m to the northeast. This site was recorded

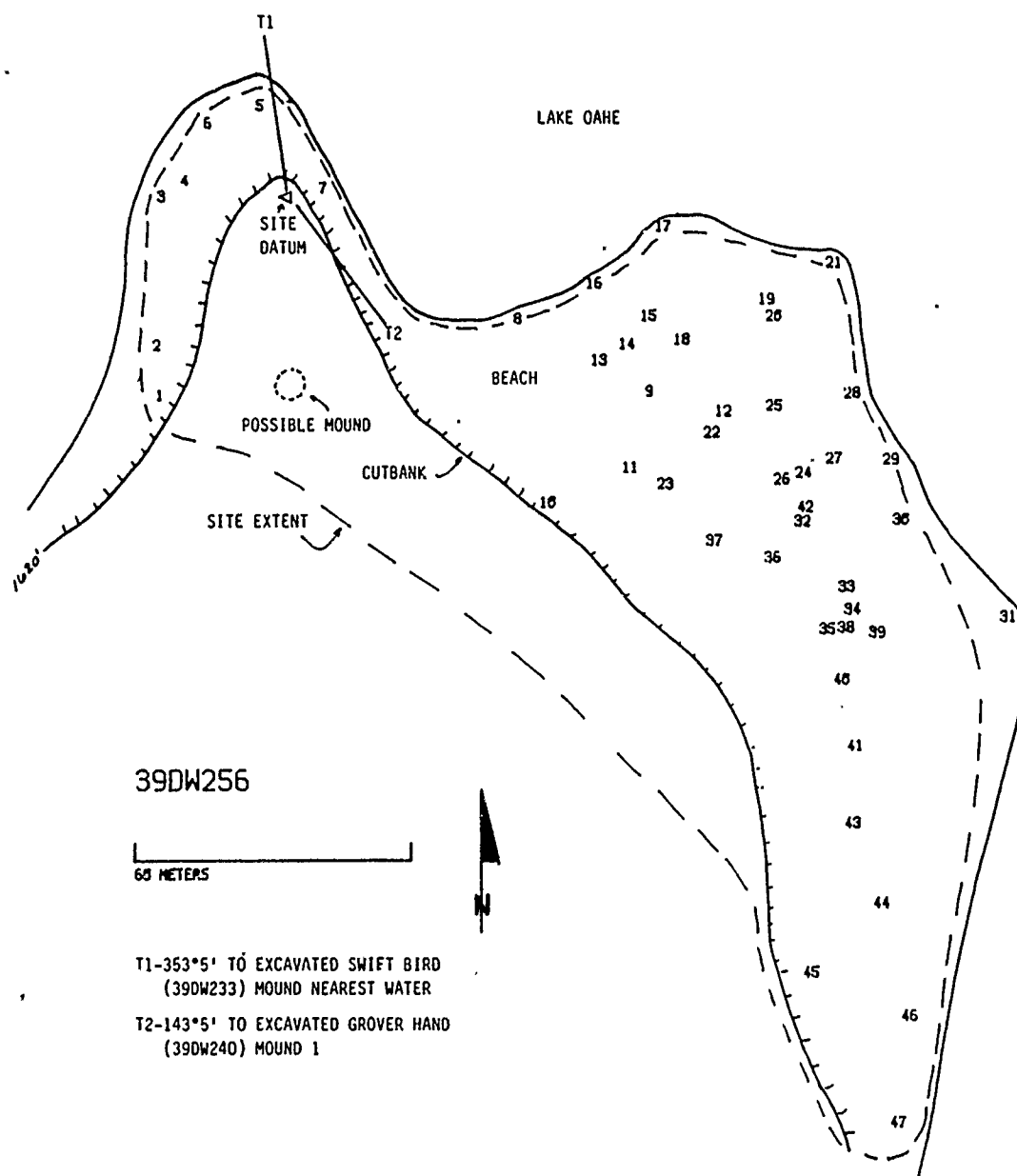


Figure 18. Map of 39DW256.

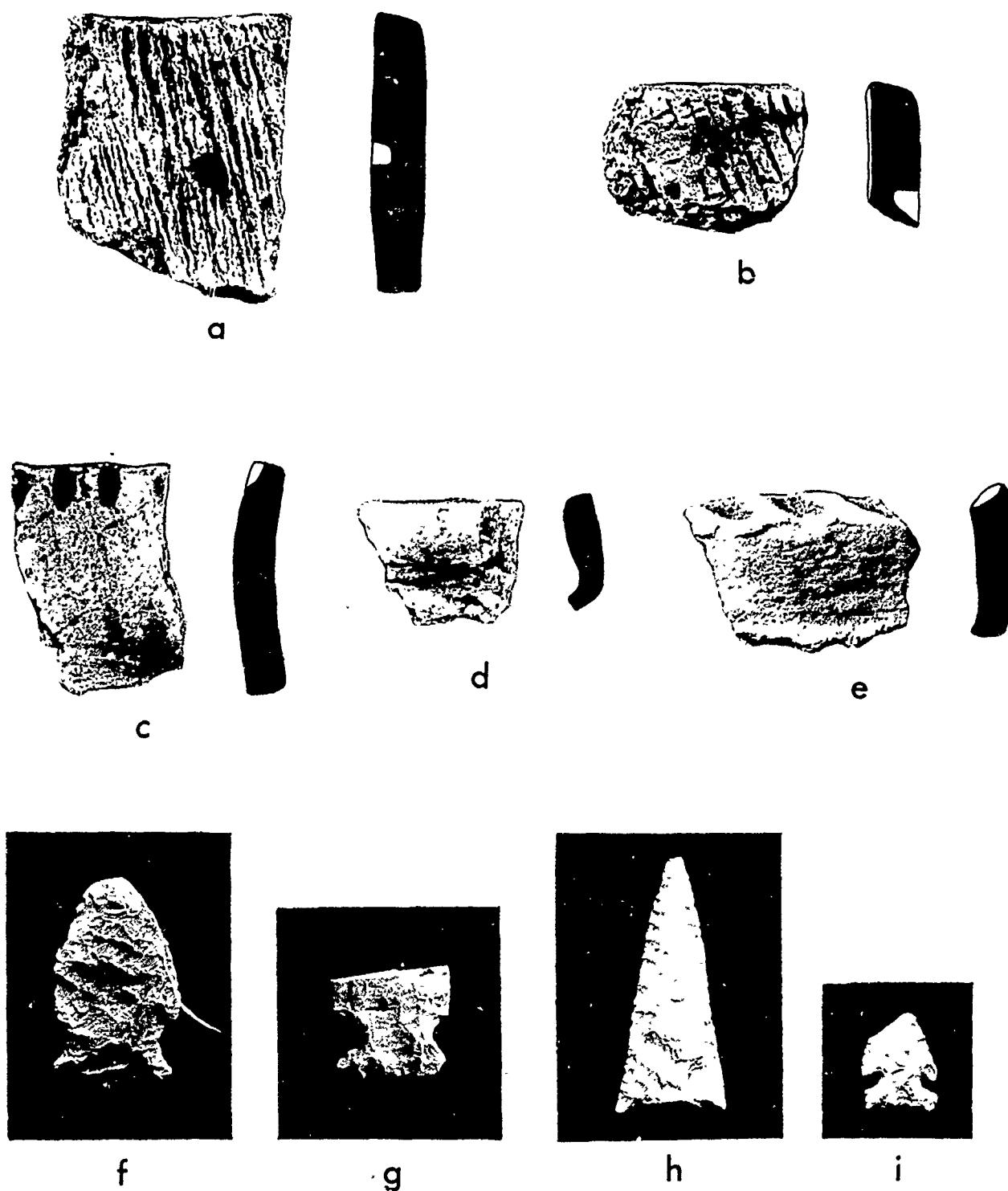


Figure 19. Artifacts from 39DW256: Scalp punctate rim sherds (a-b), Riggs decorated lip (c), unclassified rim (d), Fort Yates decorated lip (e), Besant projectile points (f-g) and Late Prehistoric projectile points. (h-i). All artifacts are actual size.

by R. C. Farrell and J. J. Hoffman in August, 1952 as 39DW232 and described as consisting of about 10 house rings. This location is normally inundated and it is possible that some of its cultural material could have washed up onto 39DW256.

A historic component also occurs on the beach and is composed of architectural, domestic and occupation materials. Architectural materials noted include bricks, nails, and window glass. Large amounts of metal debris are also present including a stove, part of a piano, miscellaneous farm machinery parts, wire, and miscellaneous metal. Bottles on the site were all machine finished with both screw and cork closures. Colors include clear, amber, aqua, purple, green, white milk glass and cobalt blue. Ceramics mainly consist of crockery with some finer wares present in the form of semi-porcelain. Some horse bone is also present in addition to the probable bison bone associated with the prehistoric components.

No structures were present on the site, however, an apparent farmstead (shown on the 1947 Corps of Engineers topographic map [Sheet 103]) occurred approximately 20 m northeast of Map Point 21 and the site boundary (see Figure 18) which was underwater during the inventory. The historic materials present on the site are most likely associated with this abandoned and destroyed farmstead, neither of which, however, retains any integrity.

The prehistoric cultural materials occurring on the beach have also lost much of their former integrity due to erosion. However, as shown by the hearth exposed in the cutbank, additional buried prehistoric cultural deposits are likely. Test excavations are recommended to examine the potential of the intact portion of the site for containing such deposits, especially their extent and temporal affiliation. Test excavations are also recommended to investigate the possible mound. Until these recommendations are completed, the site should be considered potentially eligible for nomination to the National Register of Historic Places.

CHAPTER SEVEN NEW SITES

Paul H. Sanders and Dori M. Penny

Introduction

This chapter provides a discussion of each new archeological site and isolated find recorded during the 1986 cultural resource inventory. Table 8 lists these sites while additional information is provided in Volume 2, Appendix C.

Site Descriptions

39C0143:

This historic site consists of a poorly preserved concrete foundation and two gravel concentrations situated on a low terrace overlooking the Le Compte Creek valley. The terrace has been subjected to inundation and wave action so that the present vegetative cover consists of plants which are commonly found in disturbed areas. Approximately 30 percent of the surface was visible. No structures are shown at this location on the GLO plats, 1947 Corps of Engineers topographic map (Sheet 105) or the 1968 USGS Moreau NE topographic quadrangle.

The site consists of a three-sided foundation measuring 5 X 5 m in size. It is open on the west facing side. Inundation and wave action are probably responsible for its poorly preserved condition. These impacts may also be responsible for the two 2 X 4 m gravel concentrations located on either side of the foundation. Together, these items occupy an area measuring approximately 20 m north-south by 10 m east-west (see Figure 20).

The chain of title search indicates that this land was originally a part of Allotment 3 issued as a trust patent to Louis Le Compte, Jr. on October 3, 1907. He died on December 13, 1958, the same year the U. S. Government acquired the land for the Lake Oahe take area.

The wave action has essentially stripped the topsoil off the surface of the terrace exposing the weathered shale/clay bedrock. Buried cultural deposits are unlikely. Since the site retains little integrity and lacks any other associated cultural remains, the site is not believed to be eligible for nomination to the National Register of Historic Places.

39C0144:

This historic site consists of the apparent remains of a farmstead located on the edge of a bluff overlooking an intermittent drainage valley (see Figure 21). Site area is approximately 120 meters by 40 meters. The surface of the site area is densely covered by mixed prairie grasses with a surface visibility of approximately 5 percent. It is bounded by a

Table 8. List of new sites.

<u>Site Number</u>	<u>Site Name</u>	<u>Description</u>	<u>Temporal Affiliation</u>
39C0143	L/T 1186-34	Foundation	Historic
39C0144	L/T 1186-35	Farmstead	Historic
39C0145	L/T 1186-36	Church, cemetery/ artifact scatter	Historic/Extended Middle Missouri
39DW89	L/T 1186-1	Artifact scatter	Unknown Prehistoric
39DW90	L/T 1186-4	Cairn	Probably Historic
39DW91	L/T 1186-5	Artifact scatter	Late Prehistoric
39DW92	L/T 1186-8	Farmstead (?)	Historic
39DW93	L/T 1186-9	Depression/dump	Historic
39DW94	L/T 1186-10	Artifact scatter	Unknown Prehistoric
39DW95	L/T 1186-11	Foundation/artifact scatter	Historic
39DW96	L/T 1186-12	Farmstead	Historic
39DW97	L/T 1186-14	Artifact scatter	Late Prehistoric
39DW98	L/T 1186-15	Artifact scatter	Unknown Prehistoric
39DW99	L/T 1186-16	Artifact scatter	Unknown Prehistoric
39DW100	L/T 1186-17	Le Beau cemetery	Historic
39DW101	L/T 1186-24	Small earthlodge/ village	Extended Coalescent/ Extended Middle Missouri
39DW102	L/T 1186-25	Cairn/Artifact scatter	Unknown Prehistoric
39DW103	L/T 1186-26	Artifact scatter	Unknown Prehistoric
39DW104	L/T 1186-28	Farmstead	Historic
39DW105	L/T 1186-29	Depression	Historic
39DW106	L/T 1186-30	Artifact scatter	Unknown Prehistoric

Table 8. Continued

<u>Site Number</u>	<u>Site Name</u>	<u>Description</u>	<u>Temporal Affiliation</u>
39DW107	L/T 1186-31	Artifact scatter	Unknown Prehistoric
39DW108	L/T 1186-32	Burials	Historic
39DW109	L/T 1186-103	Artifact scatter	Unknown Prehistoric
39DW110	L/T 1186-105	Artifact scatter	Extended Coalescent (?)
39DW111	L/T 1186-106	Artifact scatter	Unknown Prehistoric
39DW112	L/T 1186-108	Promise townsite	Historic
39DW113	L/T 1186-112	Artifact scatter	Unknown Prehistoric
39DW114	L/T 1186-114	Farmstead	Historic
39DW115	L/T 1186-115	Farmstead	Historic
39DW116	L/T 1186-110	Railroad bridge	Historic (1950s)
39DW117	L/T 1186-119	Farmstead/artifact scatter	Historic/Prehistoric
39DW123	L/T 1186-18	Artifact scatter	Extended Coalescent (?)/ Extended Middle Missouri

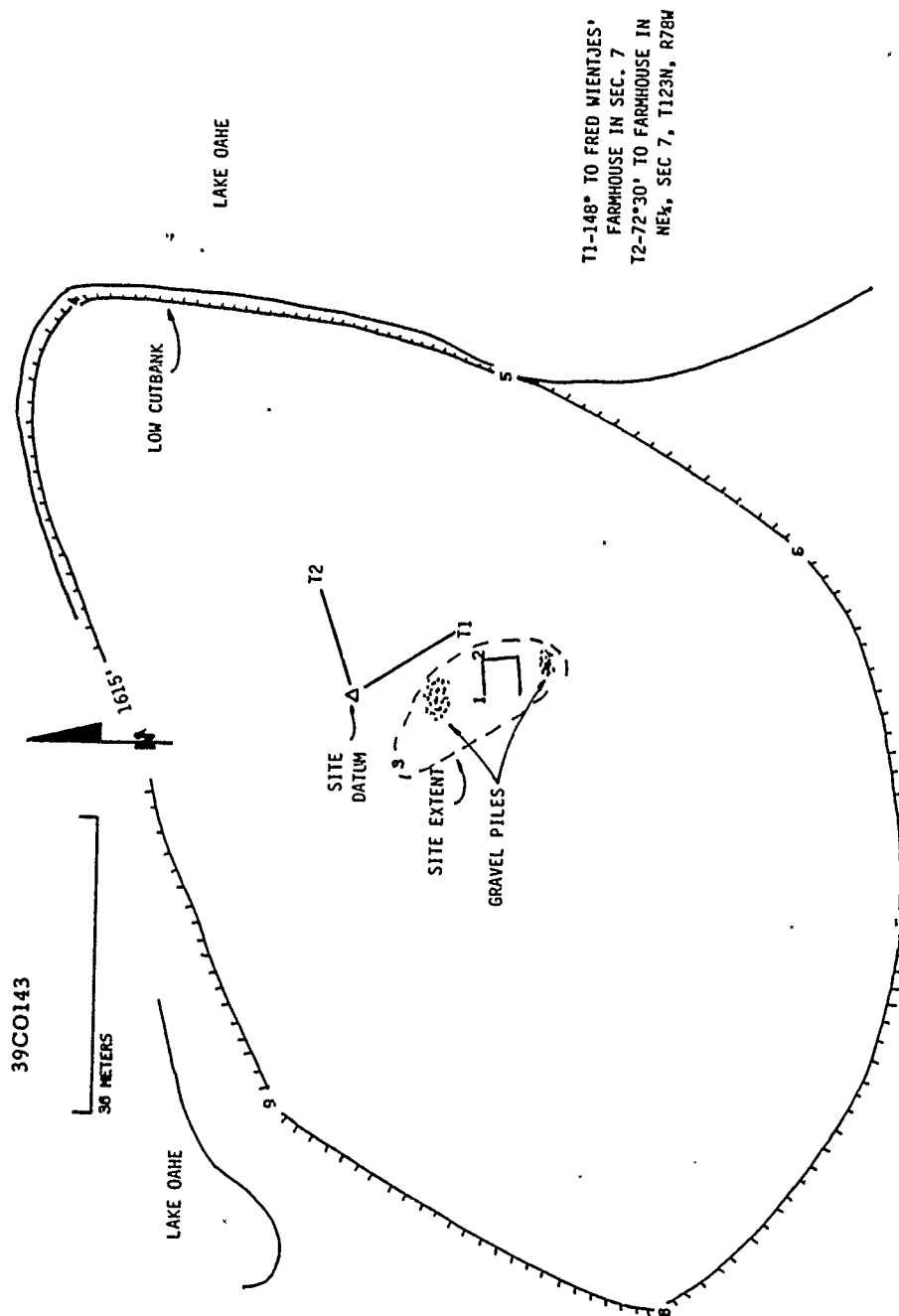


Figure 20. Map of 39C0143.

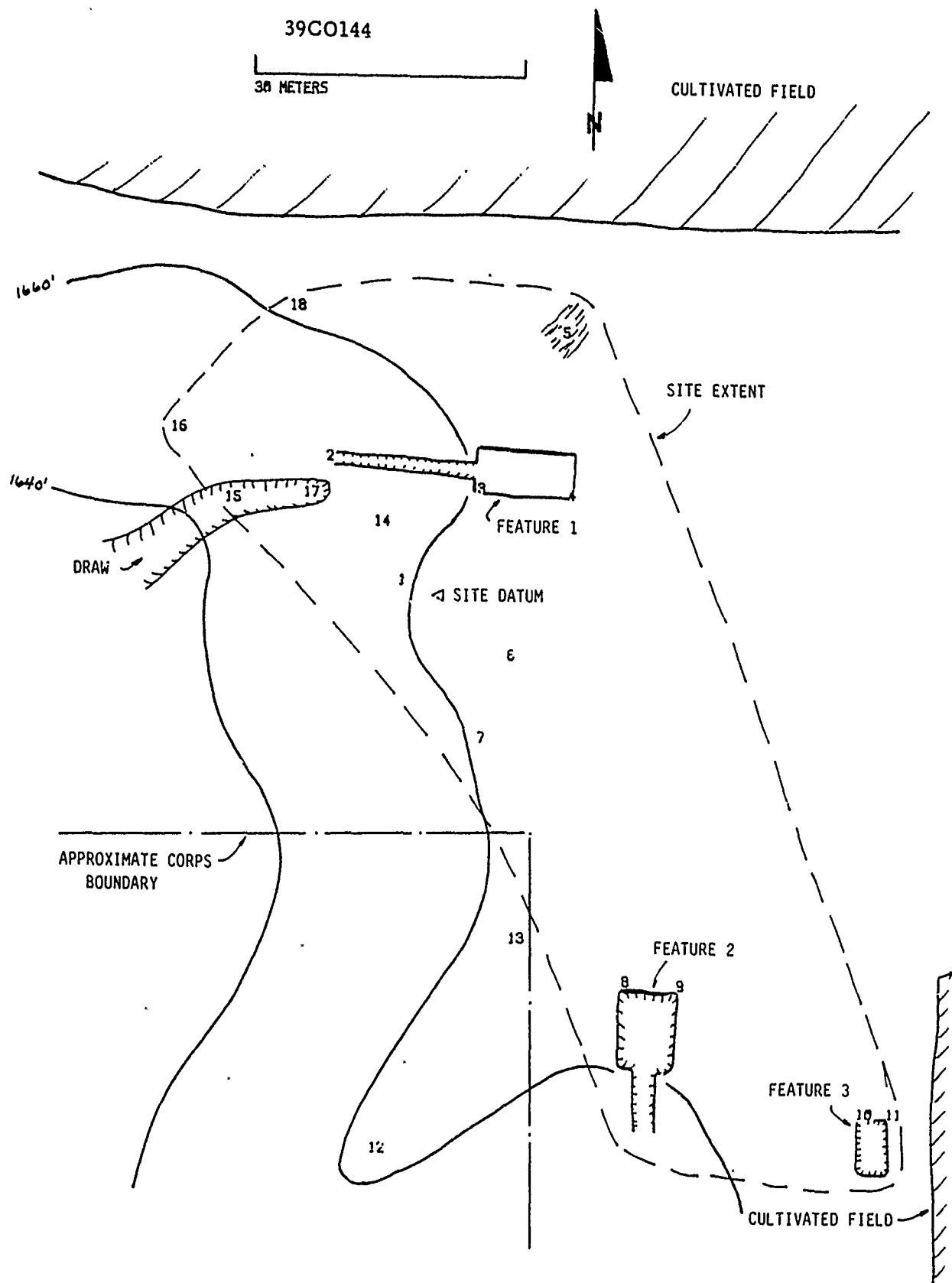


Figure 21. Map of 39C0144.

cultivated field on all but the west side. A structure with a two track leading to it is shown at this location on the 1947 Corps of Engineers topographic map (Sheet 105).

Three depressions are present on the site. The northernmost depression is approximately two meters deep and has a cement foundation that appears to be a basement. The central depression is approximately 3 m deep and lacks a cement foundation.

Feature 1 measures 11 X 5.5 X 2.5 meters and has a cement foundation that appears to have been a basement. Feature 2 measures approximately 9 X 8 X 3 meters. The walls of this depression are dirt and are nearly straight. Features 1 and 2 also have what appears to be depressed entryways. Feature 3 measures 5 X 4 X 1.5 meters. All of the features contain trash that postdates the occupation of the site. Two license plates dating 1968 and 1971 were observed in Feature 2. Feature 3 contains a large pile of wire. A board scatter is located between Feature 1 and Feature 2 (see Figure 21, Map Points 6 and 7). Associated with the board scatter are wire nails, a brick, a halter, car parts and a lard can.

In a draw below Feature 1 are several very large pieces of galvanized metal that were probably part of a shed or a grain bin (Map Point 17). At the upper end of this draw is a small cultural material scatter containing a bed spring, a galvanized bucket and a number of clear screw top bottles. A Hazel-Atlas (1920-1964) manufactured bottle embossed on the shoulder "IT'S FRENCHS" and on the base "DESIGN PAT'D FEB. 23-15" was also observed within the cultural material scatter at the upper end of the draw.

Two artifacts were collected from the general vicinity of Feature 1. These were a square-shaped perfume bottle manufactured between 1929 and 1954 by Owens-Illinois and a Vicks Vaporub bottle (Map Points 18 and 14 respectively). Artifacts observed on the surface of the site, but not collected included clear, aqua and brown colored bottle glass, sanitary cans, solder dot condensed milk cans, a blue-on-white stoneware sherd, harness parts, car parts, machinery parts, a zinc fruit jar lid, an enamel plate and a number of unidentifiable metal fragments.

The chain of title search indicates that this land was a part of Allotment 10 issued as a trust patent to Obed Le Compte on October 3, 1907. He retained ownership until it was acquired by the U. S. Government in 1957. This site should be tested in order to assess its age and integrity prior to making a determination of eligibility for nomination to the National Register of Historic Places.

39C0145:

This multiple component site is located at the northern end of a terrace along Le Compte Creek (see Figure 22). A depression of unknown function was observed within the northwestern part of the site. Below this, approximately eight bricks were observed on the edge of the reservoir. The northeastern part of the site contains the remains of a historic cemetery and structure and a prehistoric site. The historic structure consists of a partial cement foundation and a depression with a small mound of associated cultural materials. This debris consists of several metal scraps, a few brick and wood fragments and several pieces of clear glass that appear to

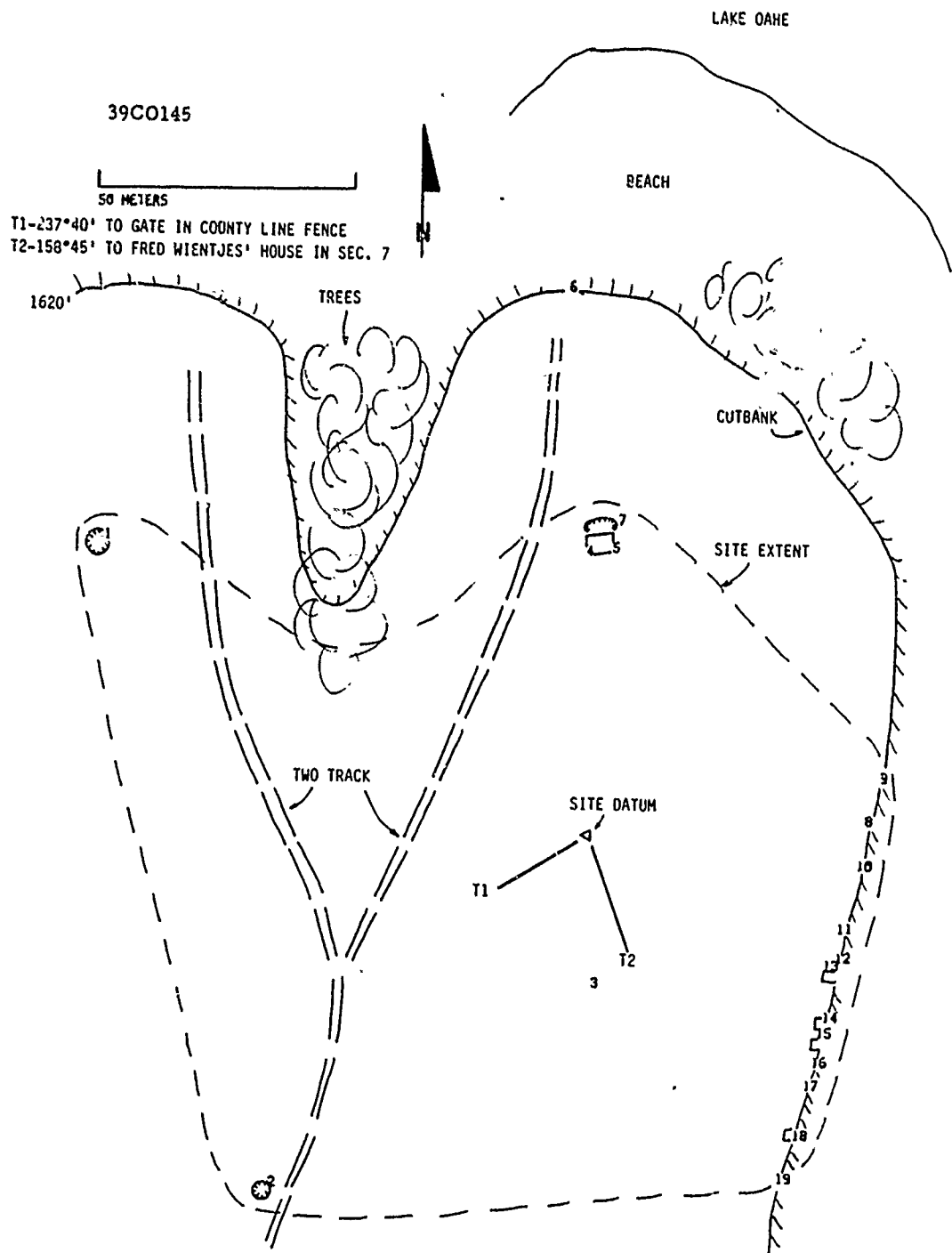


Figure 22. Map of 39C0145.

have been burned.

The USDI (1951a) report on cemeteries states that the Le Compte (Catholic) Cemetery contained 68 burials of which 59 have names associated with them. The burial dates for twenty-two of these are provided and range from 1900 to 1949 (1951a:5). It is noted within the report (USDI 1951a:2) that this cemetery "will be moved to a new site on South Dakota Highway No. 8, Standing Rock Reservation." The people in charge of the church and cemetery included Christine Le Compte, Father Cornelius, Cyril Benoist, Joe Ducheneau and Obia Le Compte.

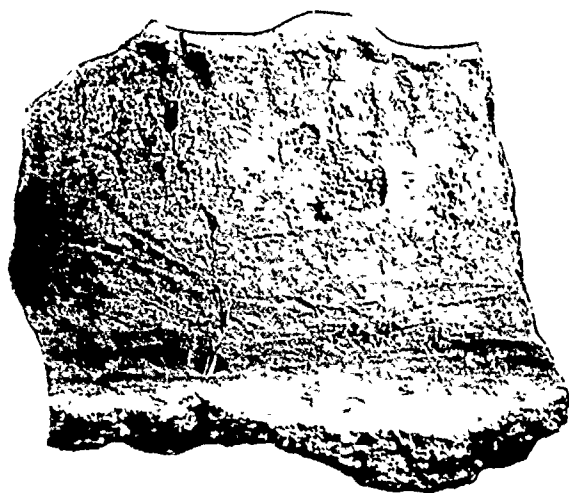
Two apparent grave markers are visible in the area of the historic cemetery. The first of these consists of a badly weathered piece of poured concrete surrounded by pieces of concrete which have fallen from it. The second consists of a poured concrete base with a tile brick and stucco marker. The name "Andy Keller" and date "1961" are inscribed into the stucco. The marker has been broken into five large pieces and may have been moved from its original location. The name of Andy Keller is not on the list of interments provided in USDI (1951a:5). Both markers are on the terrace above the beach.

Further evidence of the historic cemetery is found on the beach and in the cutbank. A number of pieces of poured concrete are present, one with an iron bed frame protruding from it and another containing the remains of a gravestone dated 1896. Part of a coffin handle was also found on the beach. The remains of three graves are exposed in the cutbank. The matrix of the graves is a loose fill. One grave contained a piece of flagging tape. All of these graves have been dug into by pothunters. One of the graves had apparently contained a number of wooden coffin fragments (some are still present in the pothunters' backdirt and in the grave) and a piece of black cloth.

The cutbank also contained abundant evidence of a prehistoric component. Bone, sherds, flakes and charcoal are abundant in the cutbank. One large pothole evidently resulted from the removal of a large cache pit and several small areas of pothunter digging are observable. Several rimsherds and bone tools were collected from the beach.

The ceramics and a bone awl are illustrated in Figure 23. The ceramics are believed to be similar to Riggs wares and suggest an Extended Middle Missouri affiliation. The closest Middle Missouri Tradition village is located approximately 300 m to the north which prior to inundation was situated at the southern edge of Le Compte Creek (see Stephenson 1971:Figure 2). This village was recorded in 1961 by R. L. Stephenson of the SIRBS and designated 39C0210. Three rectangular depressions were observed in 1961 but others may have been present. It is possible that the prehistoric artifactual remains at 39C0145 may be associated with this small Middle Missouri Tradition village.

The presence of a buried cultural level and features indicates that additional significant buried cultural deposits are highly likely. The sites may have also functioned as an off-village activity area or campsite about which little is known. Test excavations are recommended to determine the integrity, extent and nature of the cultural deposits. As a result, the prehistoric component is considered potentially eligible until such



a



b



c

Figure 23. Artifacts from 39C0145: Riggs Plains with castellations (?) (a), Riggs Plain (b) and a bone awl (c). All artifacts are actual size.

recommendations can be carried out.

The chain of title search conducted on the historic component indicates that the land was originally a part of Allotment 13 issued as a trust patent to Tillie (Lillian) Le Compte on October 3, 1907. A portion of this was later conveyed in fee by a warranty deed to J. G. Lawler, Bishop of South Dakota for a Catholic church and cemetery on March 5, 1924. The location of a structure shown on the 1947 Corps of Engineers map (Sheet 105) corresponds to the northeastern depression. R. L. Stephenson's field notes of 39C0210 in 1961, note that the access to the site is through a gate at the Le Compte church. In his description of 39C019, Stephenson (1971:3-5) notes:

An Indian church of the Roman Catholic faith and an adjoining cemetery, dating from around the turn of the century, were located less than half a mile south of the site and many of the names on the stones in the cemetery were of the Sioux-French families of Le Beau and Le Compte. The log cabin houses of Louis Le Compte and Walter Swiftbird were located between the church and the site. The church was abandoned, the cemetery moved, and all of the residents of the area except Mr. and Mrs. Oscar Molstad had left the area by 1960 due to the impending flooding of Oahe Reservoir.

From this information it is evident that at least some identifiable portion of the church was visible in 1961. No structures are shown on the 1968 USGS Moreau NE topographic quadrangle.

If the 1960 date Stephenson gives for the removal of the burials is correct, then it is presumed that the Andy Keller marker was erected after the cemetery was dismantled. Parish records and the records of the Corps of Engineers should be checked by to determine if all the burials were disinterred in 1960; and if the Andy Keller marker represents a memorial or a burial.

The ages and functions of the historic depressions should be established. If the church and cemetery date from the late nineteenth and early twentieth century, any occupation or work areas associated with them could potentially provide important data concerning Native American acculturation. Archival research, informant interviews and subsurface testing in the area of the church and depressions are needed prior to a final determination of the site's eligibility for nomination to the National Register of Historic Places.

39DW89:

This site consists of a small artifact scatter located on a valley floor next to an unnamed intermittent drainage (see Figure 24). The site area measures approximately 27 m northeast-southwest by 5 m northwest-southeast and has been subjected to severe sheetwash erosion. As such, it was estimated that approximately 95 percent of the ground surface was visible and that little deposition is present.

Cultural materials consist of a utilized flake, a flake fragment (shatter), a biface fragment and a possible diorite hammerstone. These

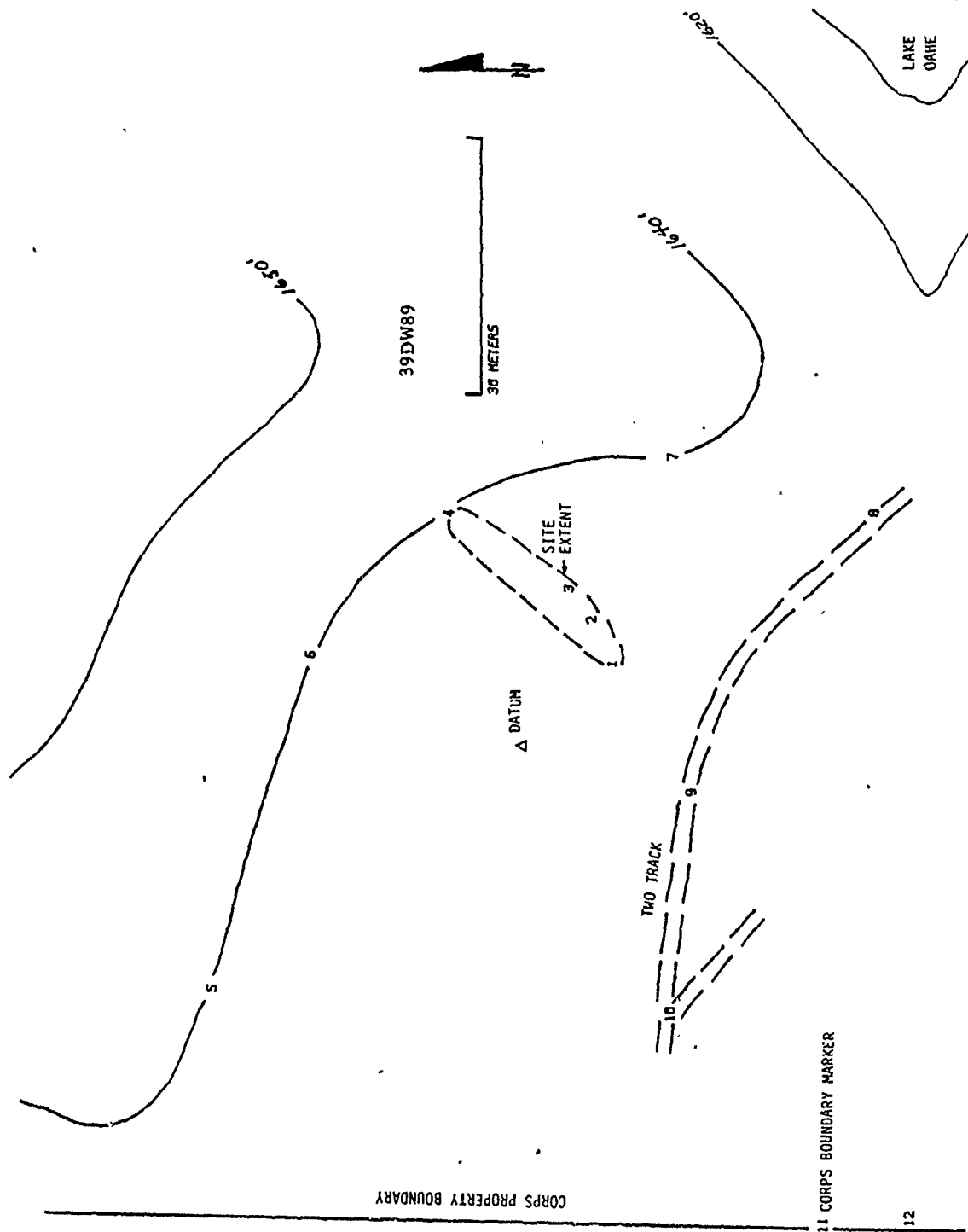


Figure 24. Map of 39DW89.

items were most likely made from raw materials derived from locally available sources found within the gravel covered terraces. Due to the lack of deposition, paucity of cultural materials and lack of unique or diagnostic artifacts, the site is not considered significant and no further work is recommended.

39DW90:

The site is comprised of a single rock cairn located on top of a ridge which extends northwestward from a large bluff (see Figure 25). The northwestern end of the ridge is truncated by Lake Oahe. On-site vegetation consists of a mixed grass prairie. Visibility was approximately 25 percent at the time of this survey.

The rock cairn is approximately 90 centimeters in diameter and consists of only seven rocks. The rocks are indented about three centimeters into the ground surface and appear to be fairly recent since they are not sodded-in. A metal post is located 5 m away suggesting that the cairn could represent a survey marker. Although similar cairns have been suggested to be possible burials (Sanders et al. 1987) or shrines (Toom and Picha 1984), the small size of the cairn, lack of well-sodded in rocks and lack of associated cultural remains argues against such interpretations. Although the function of this cairn is unknown, it appears to be recent in age and lacks any distinctive characteristics which would qualify the site for additional archeological investigation. As a result, the site is not considered eligible for nomination to the National Register of Historic Places.

39DW91:

This prehistoric artifact scatter is situated on a gentle slope near the confluence of an unnamed intermittent drainage and Beaver Creek. The site area is sparsely covered by short grass prairie as documented by a surface visibility of approximately 80 percent. The substratum is clay derived from weathered bedrock and consequently little deposition is present.

Cultural materials are equally sparse consisting of two cores, a possible endscraper fragment and three flakes, all made from locally available raw materials. These materials are located within an area measuring 30 m north-south by 15 m east-west (see Figure 26). Due to the paucity of cultural materials, lack of deposition or any potential for additional buried cultural deposits, this site is not considered to be eligible for nomination to the National Register of Historic Places.

39DW92:

This site consists of a possible historic farmstead located on a terrace overlooking the Moreau River to the north with "breaks" topography occurring to the south (see Figure 27). Mixed prairie grasses cover the terrace and allow only about 10 percent surface visibility.

Features observed at the site include a 5 X 10 m depression, approximately 1 m deep, a stone foundation 8 X 11 m in size and a 2 X 4 m rock pile or cairn. The cultural material scatter included clear and

LAKE OAHE

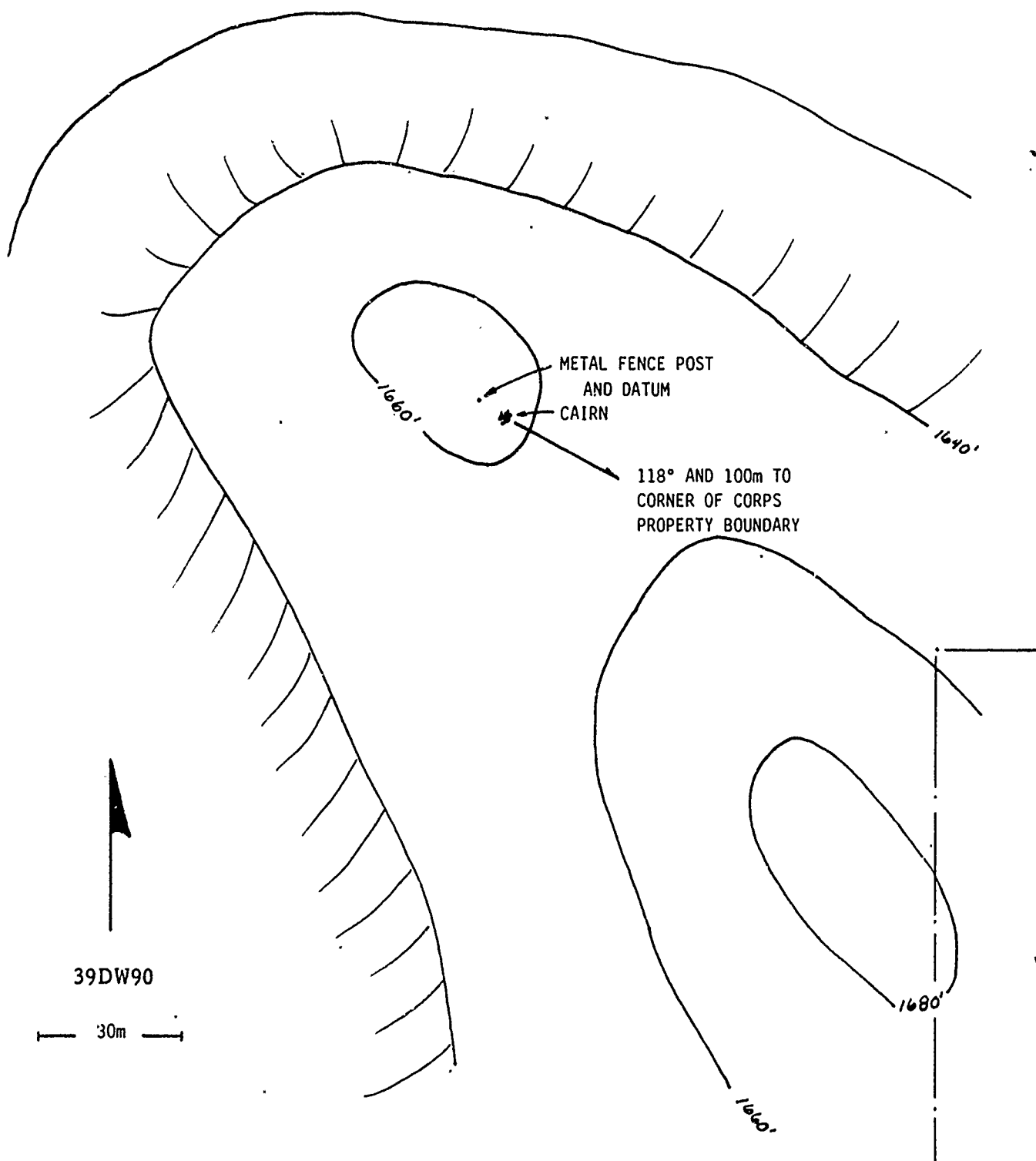


Figure 25. Map of 39DW90.

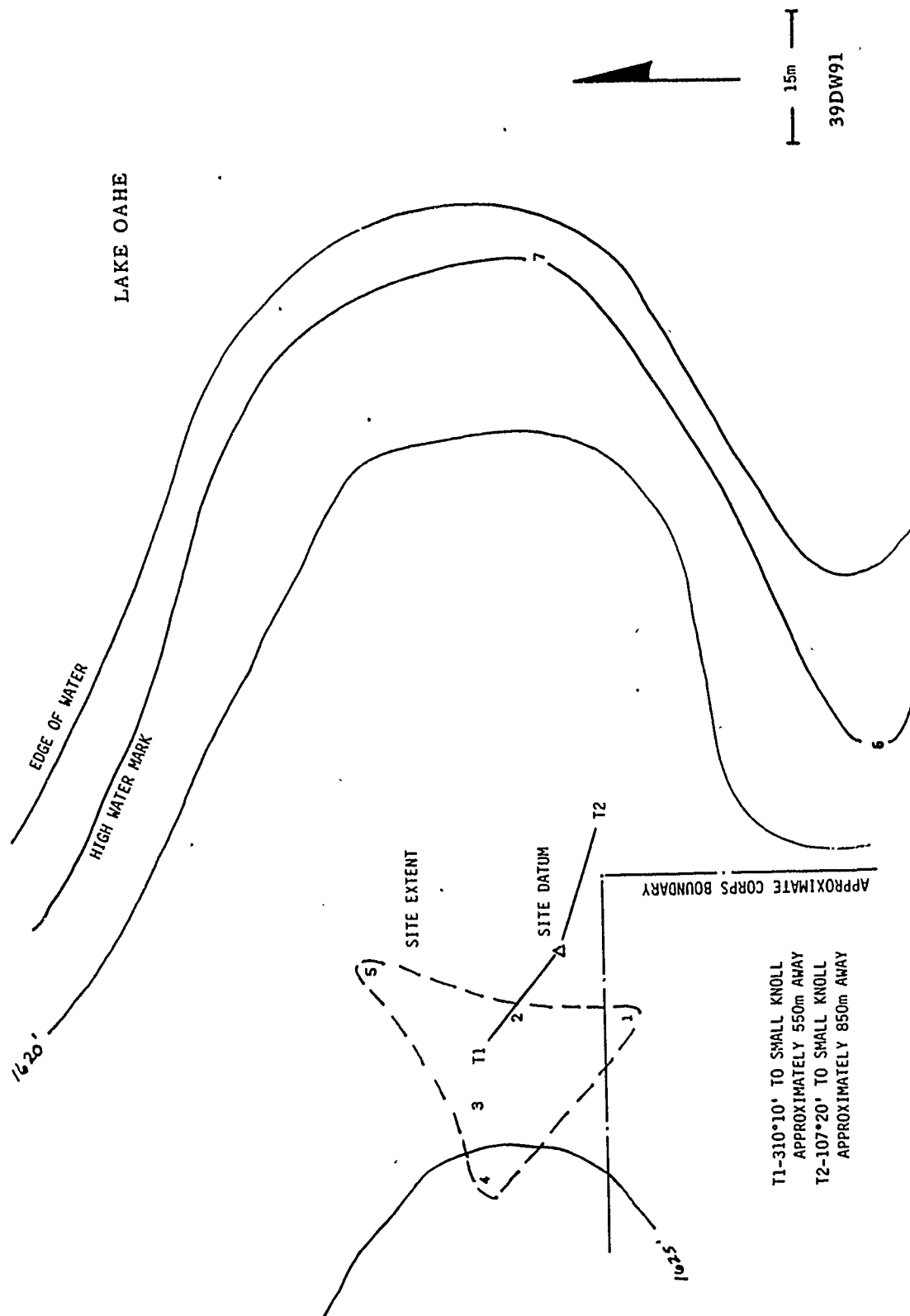


Figure 26. Map of 39DW91.

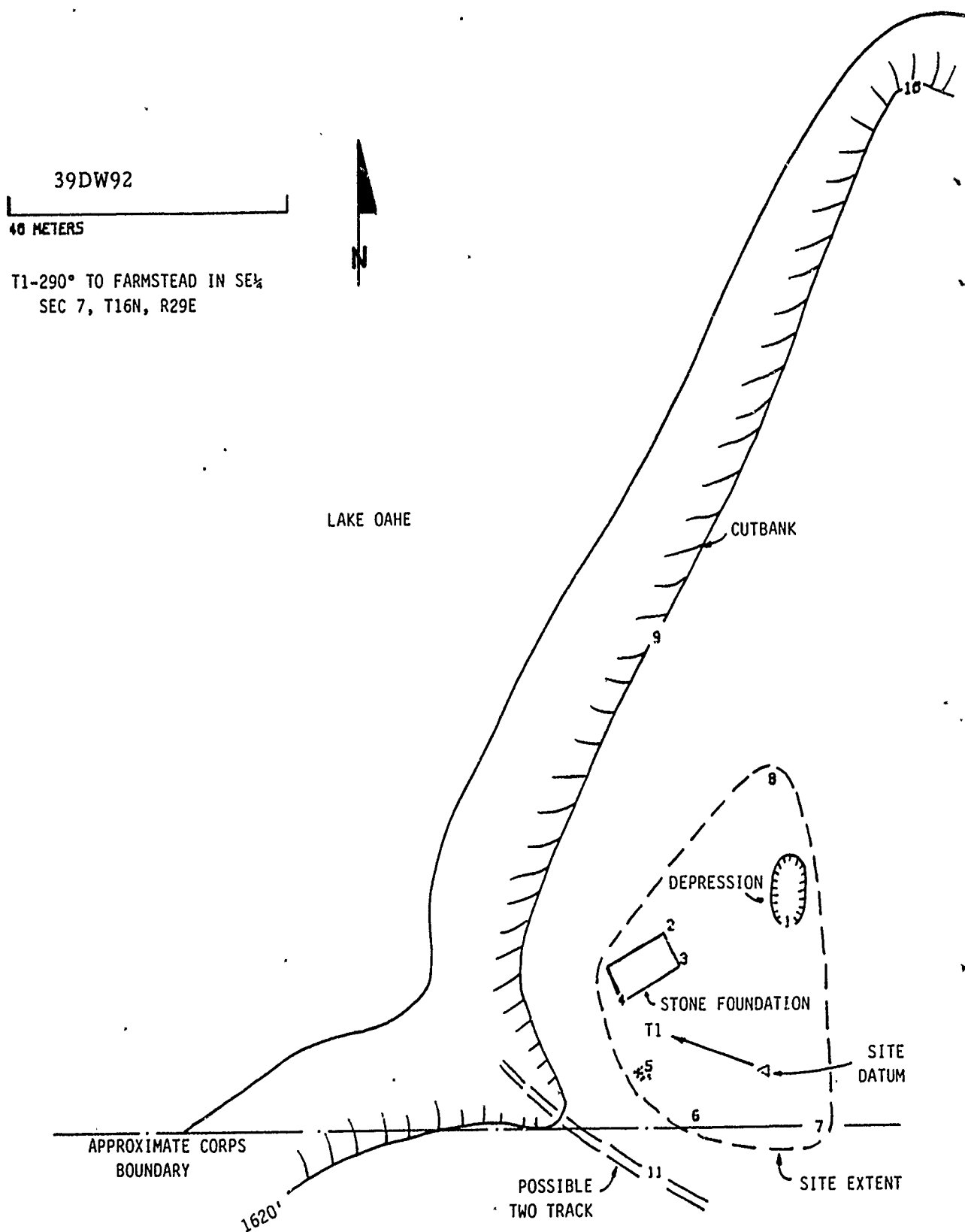


Figure 27. Map of 39DW92.

purple glass fragments, white ceramic sherds, a seam can, bricks and stove parts. These materials were scattered over an area measuring approximately 50 m north-south by 30 m east-west. No structures are noted in this area on any maps.

The chain of title search indicates that this land was a part of Allotment 209 issued to William Ducheneaux as a trust patent on March 31, 1906. He conveyed it to the Cheyenne River Sioux Tribe in 1946 who held it until it was acquired by the U.S. Government for the Lake Oahe take area.

Because of the potential for buried cultural deposits, subsurface testing should be conducted in order to determine the age and integrity of the site prior to making a determination of eligibility for nomination to the National Register of Historic Places.

39DW93:

This historic site is located on a low terrace of the Moreau River. The site area has a dense cover of mixed prairie grasses with approximately 10 percent surface visibility. Numerous cottonwood and hardwoods occur along the margins of the site and in the Moreau River bottomlands in general. Nearby portions of the bottomlands have been cleared for cultivation and hay meadows.

A cultural material scatter comprised of various metal parts, clear glass fragments, blue glass fragments, a purple glass fragment and ceramic fragments were observed on the surface of this site (see Figure 28). A small depression approximately 4.5 m in diameter and filled in with trash was also observed. Noted within the depression were a "Deere" plowshare, wooden wheel rim, and other metal parts. These materials are scattered over an area measuring approximately 80 m north-south by 30 m east-west. All of the cultural material was heavily sodded in, indicating some probability of the presence of buried deposits. No structural remains were noted on any GLO plats or topographic maps.

The chain of title search indicates that this land was a part of Allotment 1310 issued as a trust patent to Mary Two Wives on July 1, 1910. In 1934, it was deeded to Lucille Le Beau and then transferred to the Cheyenne River Sioux Tribe in 1947 who held it until acquired by the U.S. Government in 1957 for the Lake Oahe take area.

The presence of the purple glass fragment indicates use of the site area prior to 1917. The partially buried artifacts indicates that some deposition has taken place since the site was abandoned. Since a range of occupation could not be established based on surface evidence, this site should be tested in order to determine the age and the extent of occupation, prior to a determination of eligibility for nomination to the National Register of Historic Places.

39DW94:

This site consists of ten flakes scattered along the eroded slope of a ridge (see Figure 29). Little deposition or vegetation occurs on top of the ridge resulting in approximately 90 percent ground surface visibility. The eroded slopes where the cultural materials were found are almost

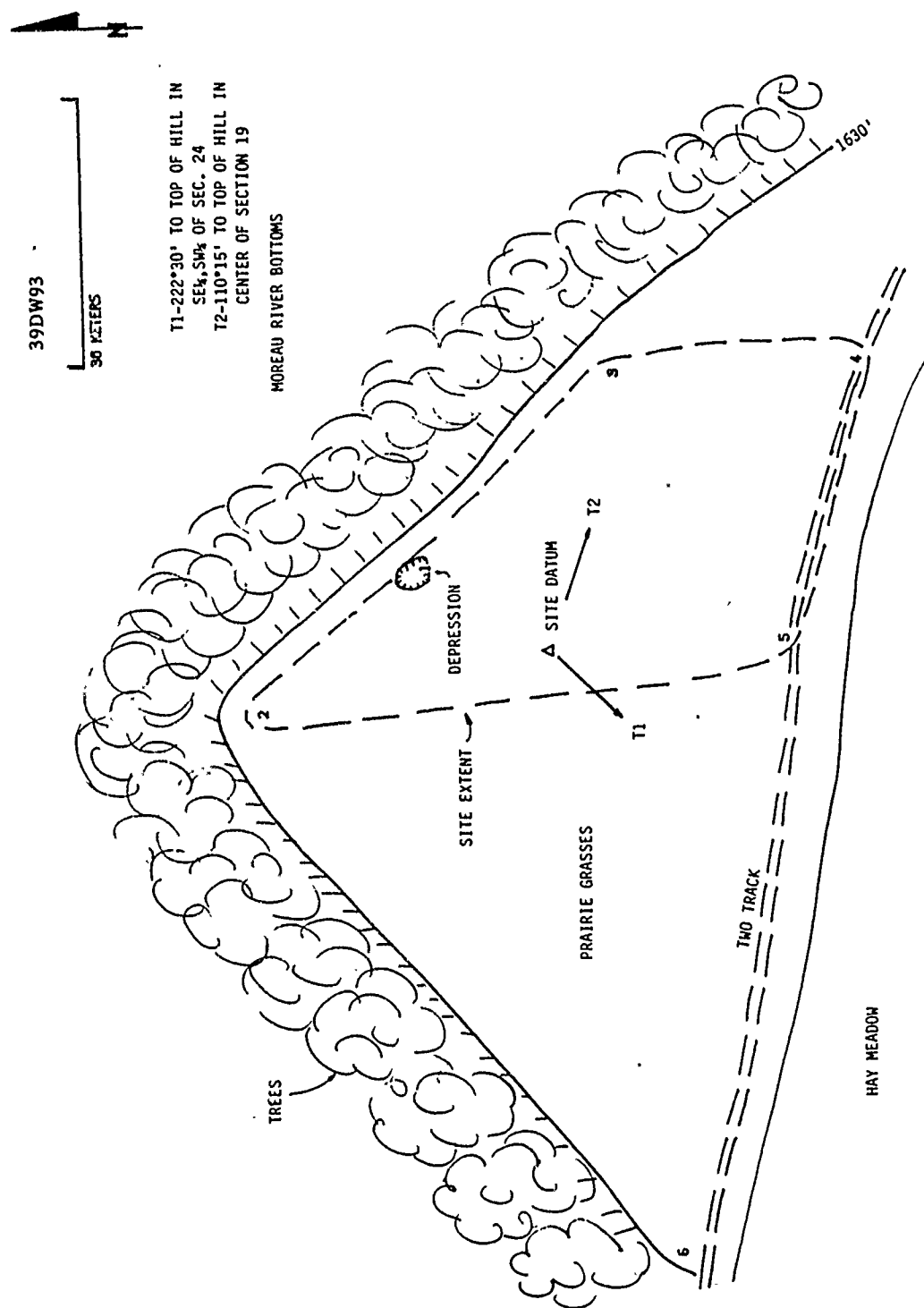


Figure 28. Map of 39DW93.

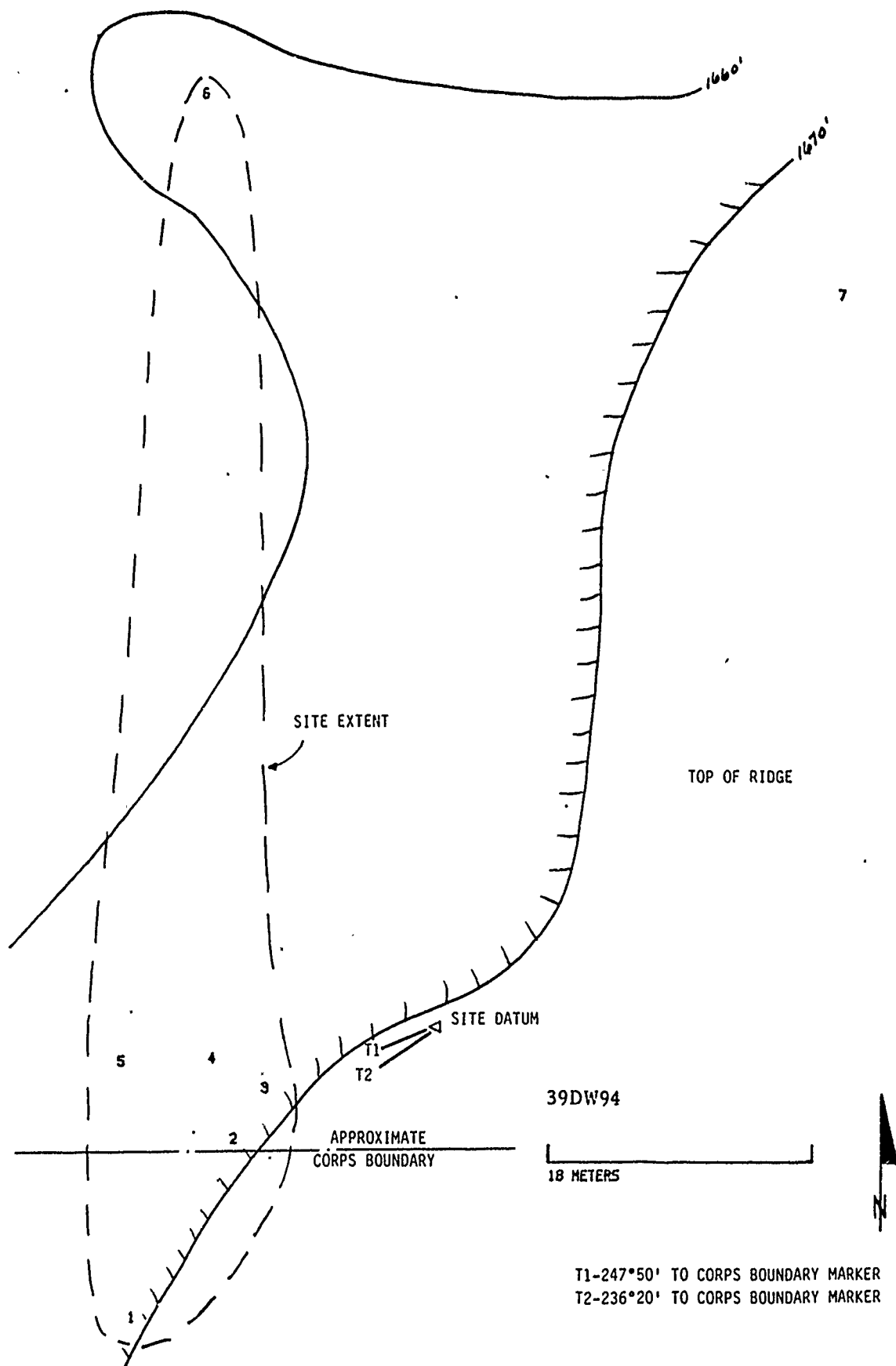


Figure 29. Map of 39DW94.

entirely barren.

The cultural materials are scattered over an area measuring approximately 85 m north-south by 15 m east-west. Nine of the flakes occur near the top of the ridge, while one is situated on a small extension of the ridge. The position of the flakes within an eroded area would initially suggest that additional cultural deposits are present on the top of the ridge, however little deposition is present in this area and significant buried cultural deposits are unlikely. As a result, the site is not considered eligible for nomination to the National Register of Historic Places and no further work is recommended.

39DW95:

This historic site is located on a low terrace of the Moreau River. The site area is covered with thick prairie grasses and surrounded by various mixed hardwoods and shrubs. Surface visibility is less than 10 percent and covered by native vegetation. The cement foundation contains a layer of unvegetated silt indicating that the site had been inundated.

The site consists of a 7 X 5 m coarse cement foundation, a pile of eight rocks and some sheet metal and wire which are widely distributed over a 35 m north-south by 25 m east-west area (see Figure 30). No structural remains associated with the foundation were observed.

Three structures are shown in this location on the 1947 Corps of Engineers topographic map. Two of these are very close to one another and are shown as a single unoccupied building on the 1952 USGS Trail City SW topographic quadrangle. The foundation recorded at this site is shown on both maps. The other structure or structures on these maps occur along the terrace edge approximately 100 m southeast of the foundation. No physical evidence was found at the location of this structure(s). It is likely that it was either obscured by the thick vegetation or slumped into the Moreau River.

The chain of title search indicates that the land was a part of Allotment 252 and was issued as a trust patent to Joseph Black Spotted Horse on February 8, 1907. He later divided it between numerous heirs. The parcel was later recombined when acquired for the Lake Oahe take area. Based on the apparent lack of integrity due to inundation, erosion and building removal, and lack of substantial or unique cultural materials, this site is not believed eligible for nomination to the National Register of Historic Places and no further work is recommended.

39DW96:

This locality appears to be a late nineteenth century farm/residence, located on a crescent-shaped terrace just north of the Moreau River bottoms (see Figure 31). A large amount of historic materials and features are present which occupy an area measuring approximately 60 m north-south by 200 m east-west.

Feature 1 is a dugout approximately 3 m wide, 6.5 m long and over a meter deep. Intact steps were noted on the south end of the dugout. At least one-third of the roof structure is intact with earth covered, axe-

39DW96

60 METERS

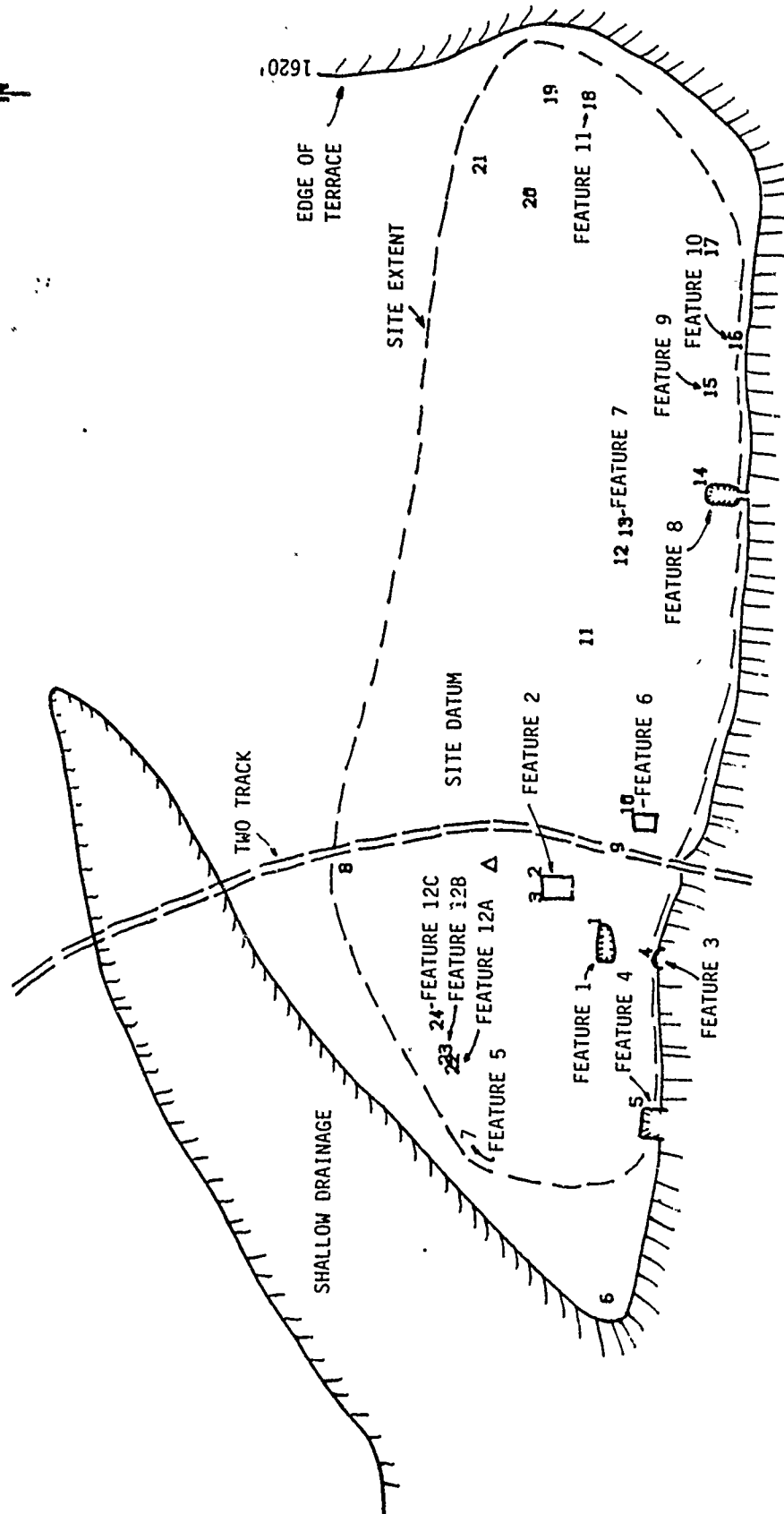


Figure 31. Map of 39DW96.

hewn beams. A "Fletcher Castoria" bottle was observed at the southeast corner at the dugout. Feature 2 is a diffuse brick foundation overlain by fragmented wooden beams. It is approximately 4 m wide X 6 m long and has no basement. A modern gas range has been dumped inside this feature. Feature 3 is a trash filled depression approximately 4 m across and a meter deep. Two early model gas ranges are located between it and the dugout (Feature 1). Trash inside the depression included a shovel and a galvanized bucket. Feature 4 is another dugout located on the terrace side-slope just above the river. It is approximately 5 m across and 2 m deep and it opens onto the floodplain. Feature 5 is a late 1920s - early 1930s Chevrolet auto body. Feature 6 is a diffuse heavily sodded cement foundation approximately 3 X 4 m in size. Feature 7 is a truck body probably late 1920s - early 1930s. Feature 8 is a small depression (approximately 3 m in diameter and three-quarters of a meter deep) located on the terrace just above the floodplain. It appears to have an excavated entrance leading to the edge of the terrace. Feature 9 is the remains of a wagon. Other cultural material observed included a bike fender, muffler, and sheet metal.

Feature 10 is a wood burning stove located on the edge of the terrace. It was manufactured by the Majestic Manufacturing Company of St. Louis. It is a "Great Majestic" and is quite ornate. Leather harness fragments were noted inside the fire box. Feature 11 is an intact wagon of specialized use and it appears similar to an ore wagon. Feature 12 consists of three associated small (1 m) circular depressions located within approximately 9 m of each other and occur in a linear arrangement. The central one has a large wooden beam exposed in the bottom. The cultural material scatter observed on this site included white ceramic fragments, clear and blue bottle glass, harness fragments, wire rolls, a small mechanical scoop of some kind, numerous beams and wood plank fragments, wire nails, sawed bone and bricks.

A structure located approximately 50 m northeast of the site is shown on a 1898 GLO plat and the 1952 USGS Trail City SW quadrangle. Evidence of this structure was not found during the 1986 investigation. In addition, two structures located approximately 50 m southwest of the site along the bank of the Moreau River are shown on the 1947 Corps of Engineers topographic map. Erosion of the river bank has destroyed these two structures.

The chain of title search indicates that this land was a part of Allotment 1310 issued as a trust patent to Mary Two Wives on July 1, 1910. In 1934, it was deeded to Lucille Le Beau and then transferred to the Cheyenne River Sioux Tribe in 1947 who held it until acquired by the U. S. Government in 1957 for the Lake Oahe take area.

This site may provide information about a little-known period of reservation history. A number of structures are relatively intact, especially in comparison to other historic sites of the project area. This is also one of the few locations which show up on the early GLO plats and have not been inundated. Although the 1898 structure was not located, it is possible that some of the structures located in 1986 are related to this early occupation. Test excavations and archival research should be conducted to determine the nature and function of the various features. As a result, this site should be considered potentially eligible for

nomination to the National Register of Historic Places.

39DW97:

This small prehistoric artifact scatter is located on top of a bluff overlooking the Moreau River valley. The bluff top consists of a substratum of gravels which is mantled by a thin layer of soil and a sparse covering of prairie grasses and scattered sagebrush. This has resulted in a surface visibility of approximately 20 percent.

The site measures approximately 20 m northwest-southeast by 5 m northeast-southwest (see Figure 32). Observed cultural materials include 35 flakes, three bifaces, two cores, two utilized flakes and an unnotched triangular projectile point. The presence of numerous primary and secondary decortication flakes and a wide variety of raw material types suggest that procurement and reduction of the various chert, chalcedony and quartzite raw materials contained within the local gravels was the main site activity. Unnotched projectile points have been found in both Plains Woodland and Plains Village sites (Brown et al. 1982) as well as in sites related to Late Prehistoric nomadic hunter-gatherer groups (see e.g., Reher and Frison 1980). This site could be associated with any of these Late Prehistoric cultural groups.

Due to the lack of deposition, the site is not believed to have the potential for yielding any additional significant information. As a result, the site is not considered eligible for nomination to the National Register of Historic Places.

39DW98:

The location of this prehistoric artifact scatter on a bluff top is very similar to 39DW97. The bluff top is also comprised of a gravel substratum and a sparse covering of prairie grasses, providing a surface visibility of 30 to 40 percent. A few cottonwood trees occur approximately 50 m north of the site within an large, abandoned gravel pit. Given the size of the cottonwoods the gravel pit was probably abandoned about 20 years ago.

The site contains 62 flakes, two retouched flakes, two utilized flakes, four bifaces and three cores which are scattered over an area measuring approximately 80 m north-south by 20 m east-west (see Figure 33). The majority of the items were made from varieties of Tongue River silicified sediment. These and other raw materials are locally available within the gravel deposits. The function of this site is probably related to lithic procurement and reduction of these local gravels. This assumption is supported by the presence of a few flake concentrations of similar raw material types (e.g., yellow/red Tongue River silicified sediment). It is unlikely that additional significant cultural deposits are present within the shallow soil. As a result no further work is recommended and the site is considered not eligible for nomination to the National Register of Historic Places.

39DW99:

This is a very small prehistoric site located on an exposed and eroded

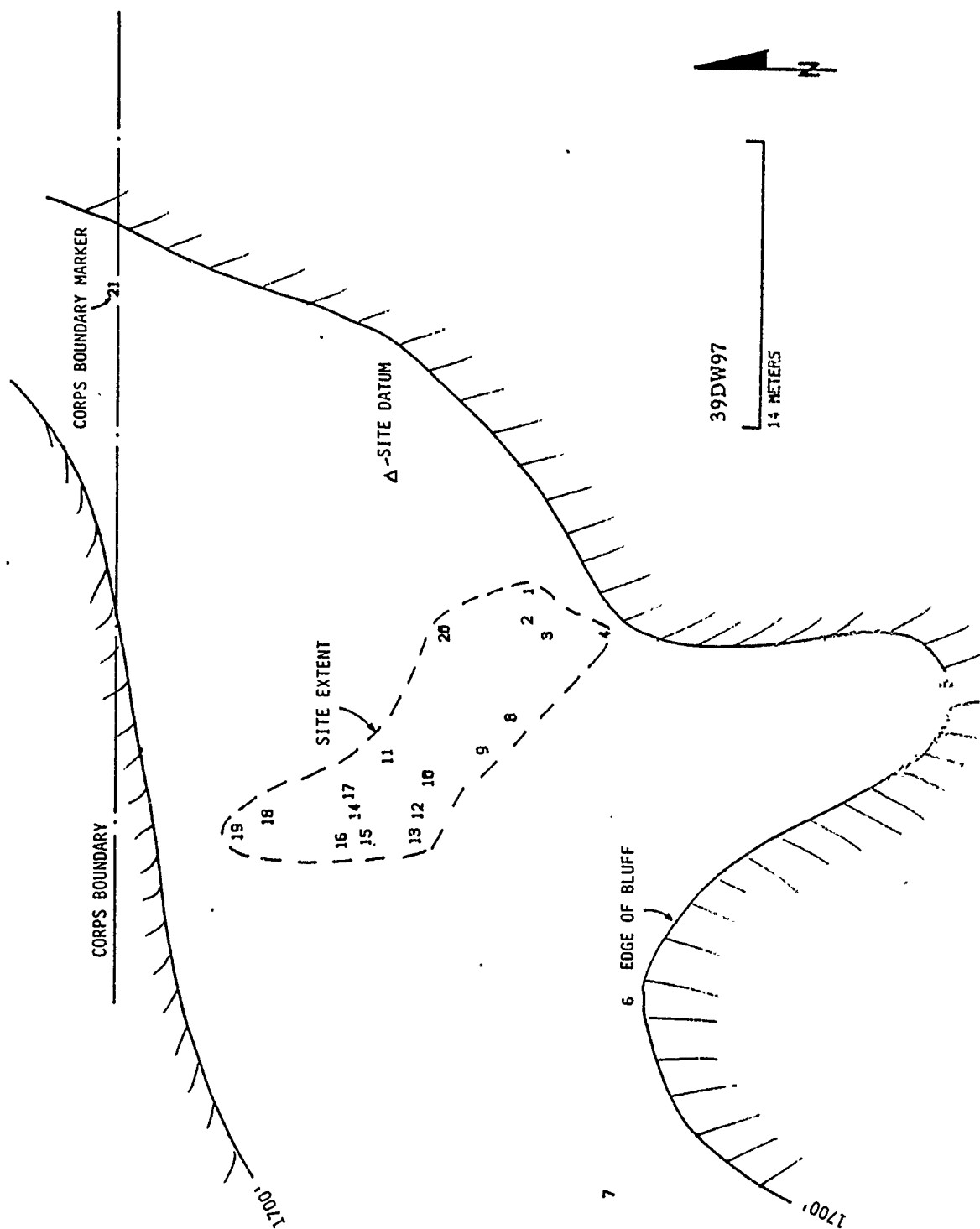


Figure 32. Map of 39DW97.

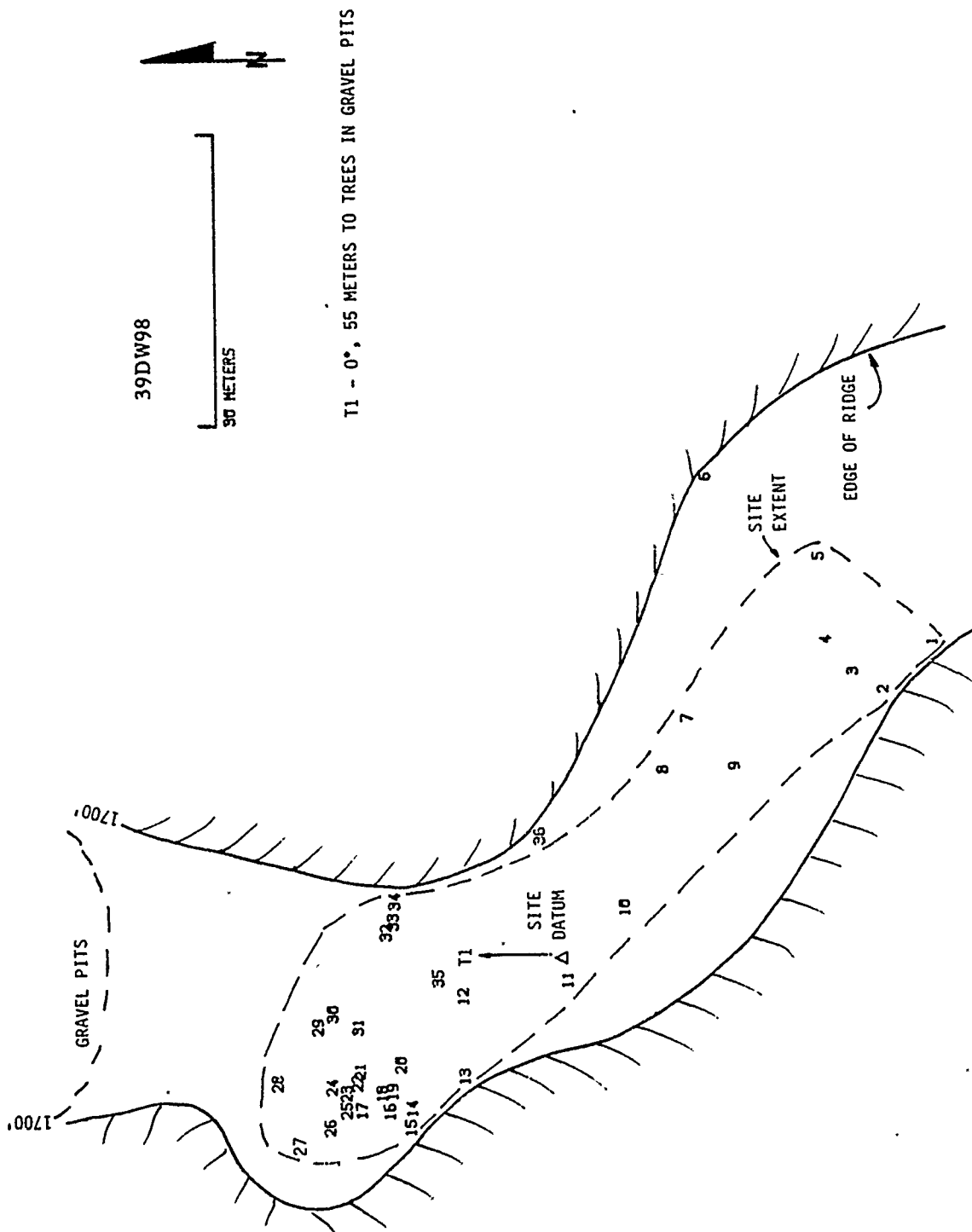


Figure 33. Map of 39DW98.

shale/clay slope of a ridge along the Moreau River valley (see Figure 34). Vegetation is very sparse resulting in a surface visibility of 80 to 90 percent. A few scrub oak trees occur to the south of the site and along the southern edge of the ridge.

The site consists of one yellow/red Tongue River silicified sediment secondary flake, a core or tested cobble of the same material and a piece of brown chert (shatter). These materials occur in an area measuring approximately one by five meters.

The small size of the assemblage and lack of deposition or integrity indicates that little additional significant information could be gathered from this site. Therefore, the site is not considered eligible for nomination to the National Register of Historic Places.

39DW100:

This site is the remains of the Le Beau cemetery shown on the 1947 Corps of Engineers topographic map. The site is located on the top of a ridge covered with thick mixed prairie grasses with a surface visibility of approximately 10 percent. A few scrub oaks occur on the slopes of the ridge.

The cemetery consists of 14 depressions approximately 1 X 2 m in size and one depression 2 X 2 m in size (see Figure 35). Several depressions have a number of rocks scattered around or in them. Two cement slabs apparently used as headstones are also present. In addition to the depressions and grave markers, an old tire and a concentration of wood posts and barbed wire was also noted. An old road grade leading to the cemetery is still visible. It is also shown on the 1947 Corps of Engineers maps.

The Le Beau Catholic (Moreau River) Cemetery was under the direction of Johnson Le Beau and Father Leo Freiderichs and consisted of 19 burials with internments ranging from 1903 to 1945 (USDI 1951b:18).

The chain of title search conducted at the Cheyenne River Sioux Tribal Office indicates that this land was a part of Allotment 150 issued as a trust patent to Alex Le Beau on March 31, 1906. He deeded it to his wife on September 5, 1914. Although she left the land to numerous heirs in 1934, according to the Dewey County Records and Deeds, a portion of it was filed as Patent Record No. 6 (No. 43336) to Eugene Whitney on April 19, 1918. However, no record of this transaction was on file at the Tribal Office and no mention of the cemetery was found at either office. The land, was acquired by the U. S. Government in 1957 for the Lake Oahe take area.

From the depth of depressions and scattering of rocks it seems likely that the the graves were relocated as a result of the incorporation of the parcel into the Lake Oahe take area. However, given the recent burials uncovered at 39C0131, another cemetery, (Mike Keys, U.S. Army Corps of Engineers, Park Ranger, personal communication 1987), there is a potential for burials to occur at this site. Until additional archival research can accurately determine if all burials were relocated, the site should be considered potentially eligible for nomination to the National Register of

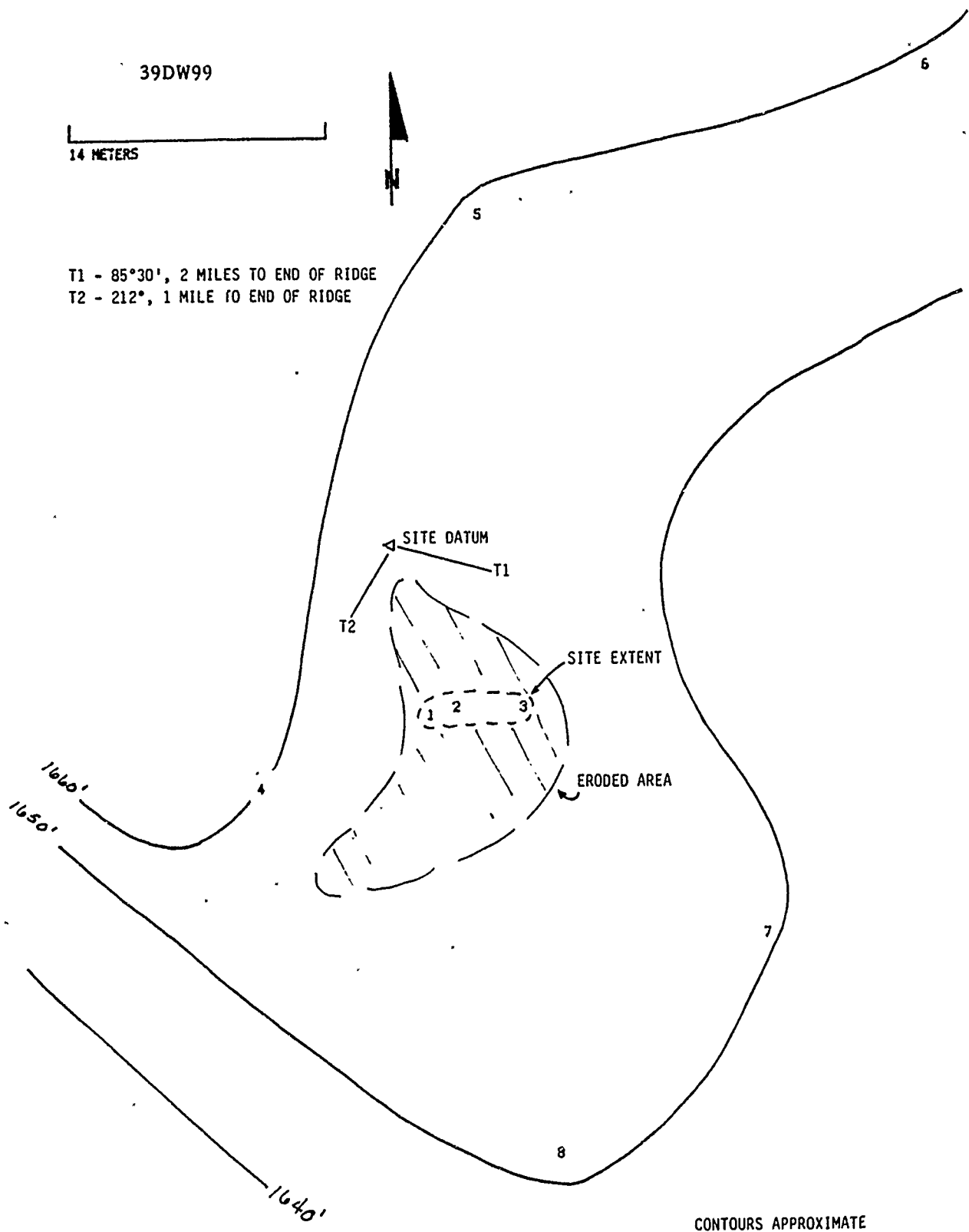


Figure 34. Map of 39DW99.

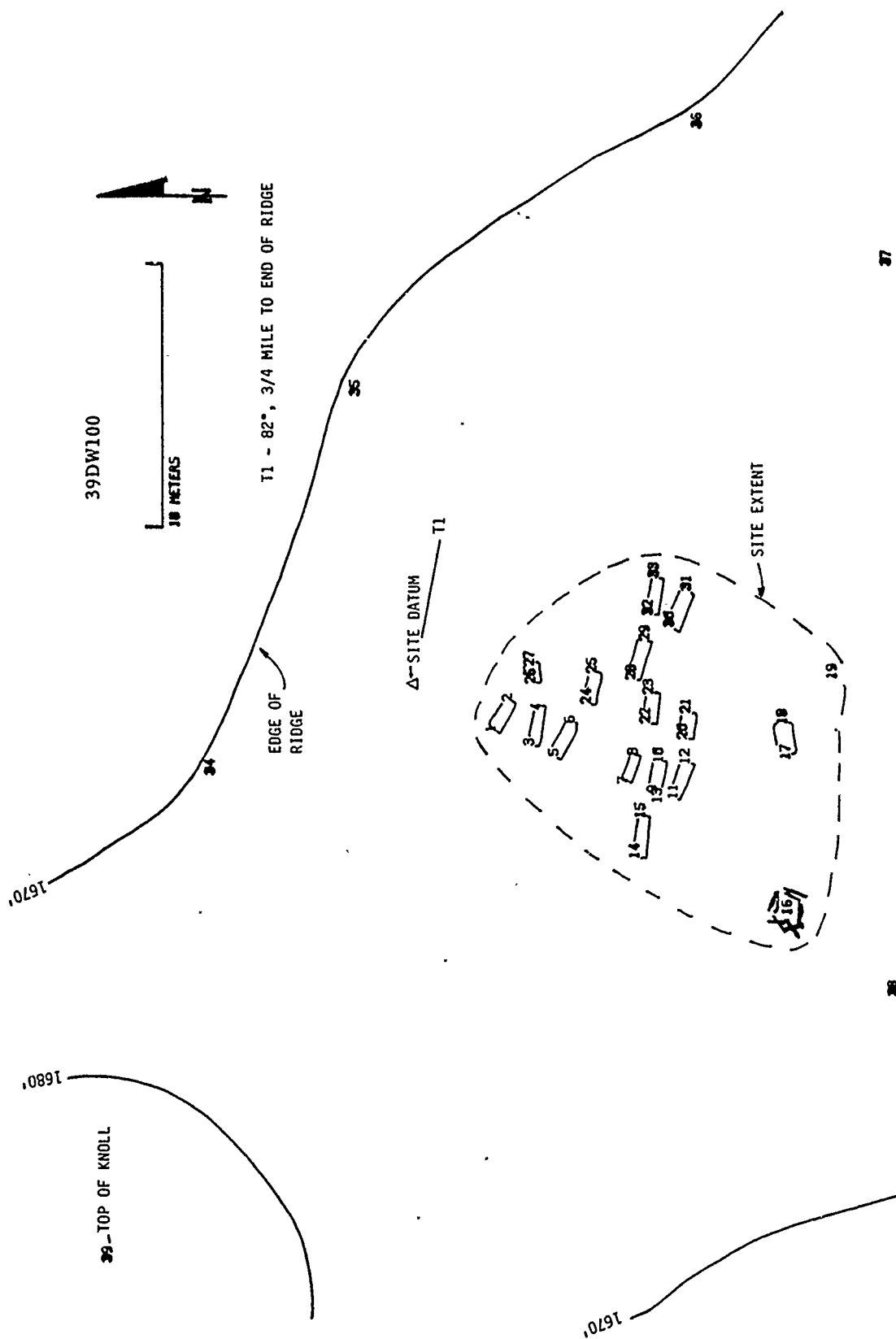


Figure 35. Map of 39DW100.

Historic Places. It should be noted that any exposed human remains regardless of eligibility are covered by special USACE procedures for their recovery.

39DW101:

This is a small earthlodge village situated on the top and slopes of a grass-covered ridge (see Figure 36). At high water this ridge becomes an island and as a result has been subjected to extensive erosion due to wave action. Numerous erosion-related soil cracks and slump blocks have also been created as a result of wave action. One massive slump block containing a house depression, cache pit and large quantities of bone, burned rock, ceramics and lithic materials has apparently slid down in one piece from the top of the ridge. This area is now directly exposed to wave action which is responsible for displacing large quantities of cultural materials onto the beach. This displacement has also resulted in an artificially enlarged site area which presently measures approximately 140 m east-west by 100 m north-south. Surface visibility on the beach and exposed cutbanks was 100 percent. Density of surface vegetation was dependent upon the thicknesses of soil overlying the shale bedrock. Shallow soil occurred on steeper slopes resulting in approximately 50 to 80 percent surface visibility while thicker soils such as exposed along the lower slump block were covered by dense vegetation allowing only 10 to 25 percent surface visibility.

Two depressions were observed on the site. One intact circular depression measuring approximately ten meters in diameter occurs on the top of the ridge while the other is exposed in the cutbank (see Figure 36). As noted previously, large quantities of bone, ceramics, burned rock and lithics are scattered along the 100 m long cutbank. Observed lithic raw materials consisted of Tongue River silicified sediment (both gray and red/yellow), coarse quartzite and miscellaneous chert. Collected artifacts are illustrated in Figure 37 and include a bison hyoid with small notches and two rim sherds. One of the sherds is comparable to Riggs Plain Rim (cf. Sperry 1968: Plate 6a) while the other appears similar to the La Roche wares, possibly La Roche Horizontal Incised Rim (cf. Hoffman 1968: Plate 16b). The latter suggests an affiliation with the Extended Coalescent variant which is consistent with the circular house depression and wide variety of raw material types. However, a probable Extended Middle Missouri component is also likely based on the other rim sherd.

This site is a small earthlodge village with buried cultural materials and features which could yield additional significant information on the prehistory of the region. Since the site is rapidly being destroyed by wave action, test excavations are recommended to determine the subsurface extent, integrity and research potential before the lower portion of the site is totally destroyed.

39DW102

This site consists of two rock cairns and a small artifact scatter located on the edge of saddle along a ridge (see Figure 38). An unnamed intermittent drainage valley occurs on east side of the ridge while the Moreau River (Lake Oahe) is on the west. The entire site area has been eroded down to the weathered shale/clay bedrock resulting in little

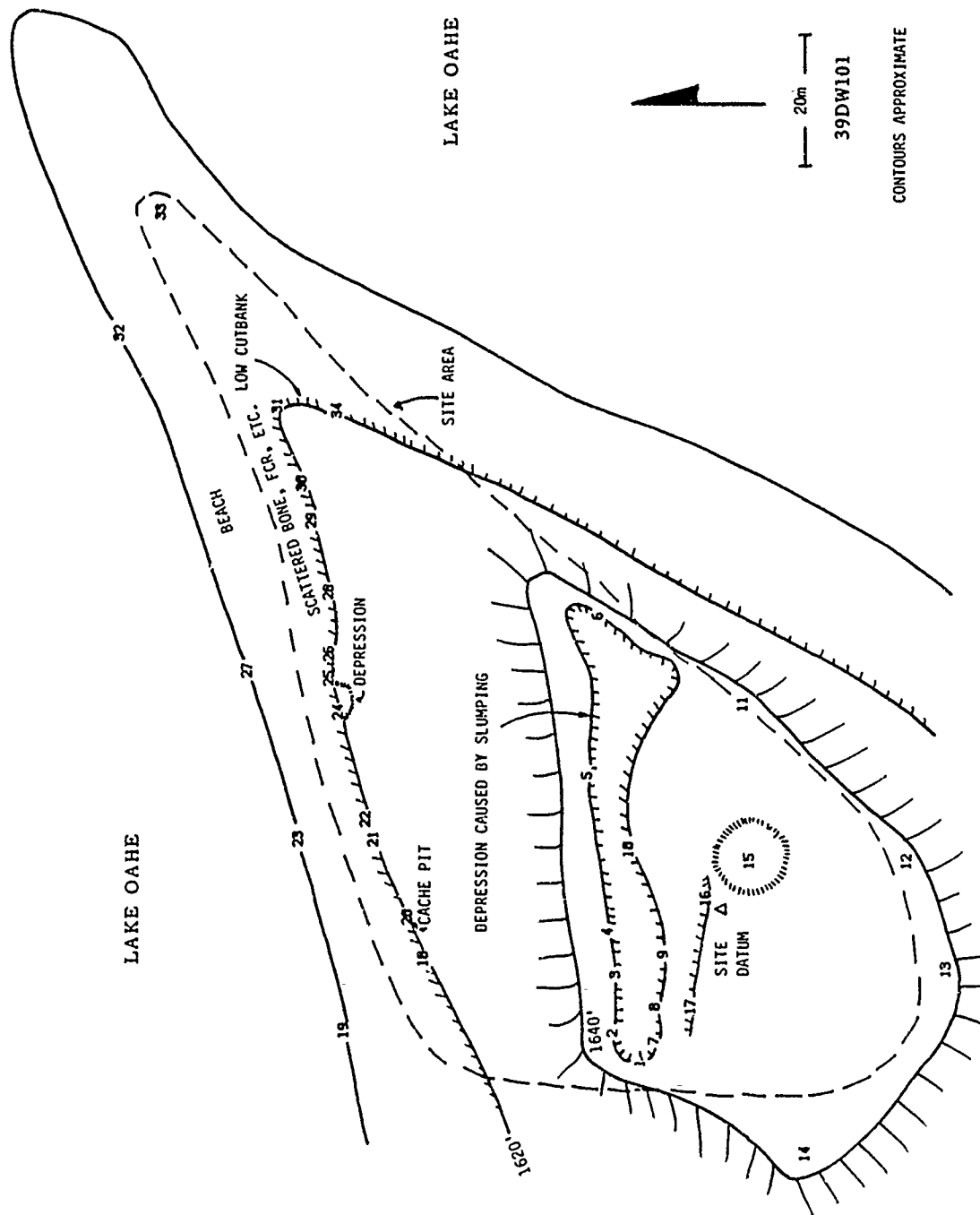


Figure 36. Map of 39DW101.



a



b



c

10 cm

Figure 37. Artifacts from 39DW101: Riggs Plain Rim (a), La Roche Horizontal Incised Rim (b) and a notched bison hyoid (c). All artifacts except (c) are actual size.

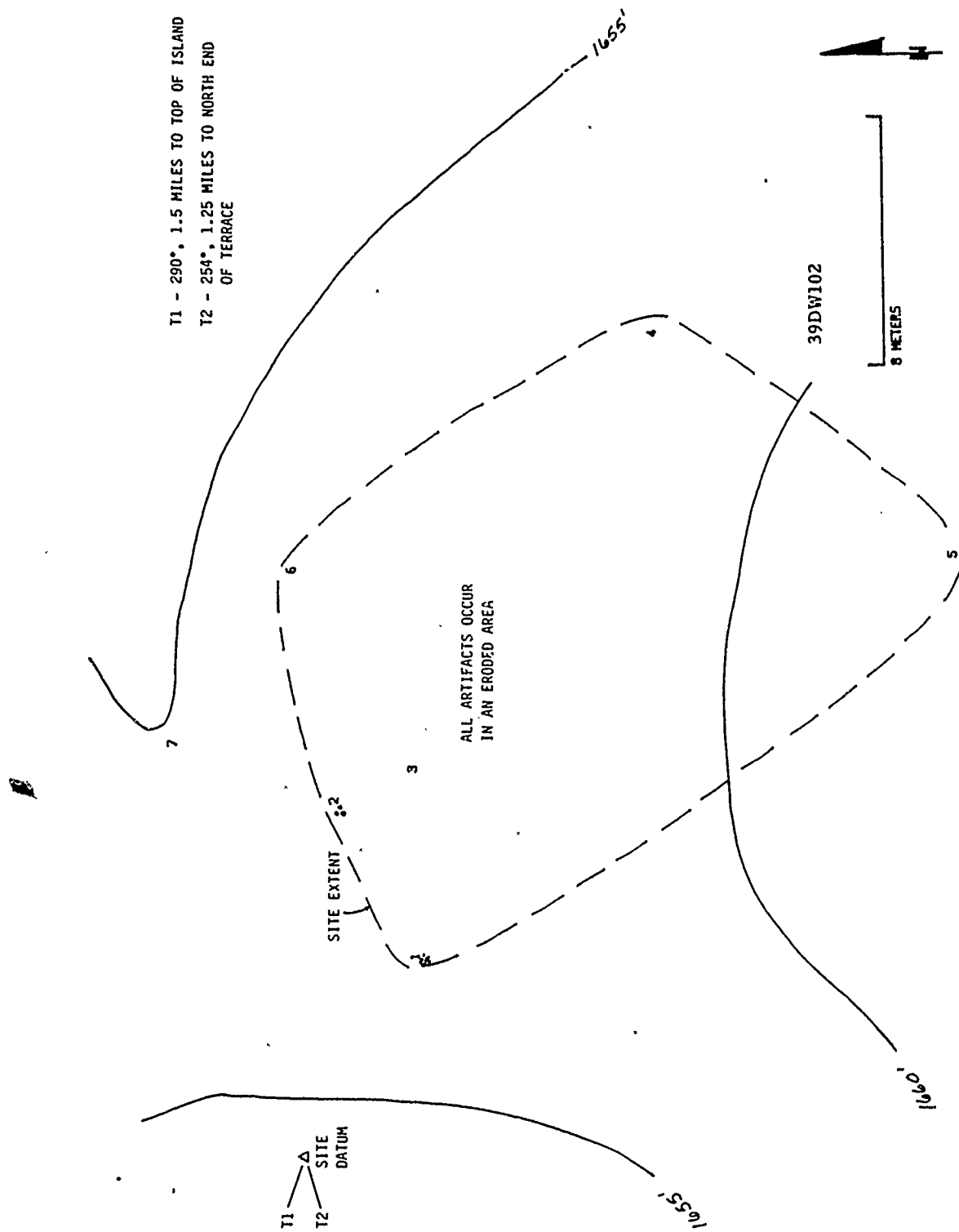


Figure 38. Map of 39DW102.

deposition or vegetation. The sparse covering of prairie grasses results in a surface visibility of approximately 90 percent. Scattered scrub oak are also present in the vicinity of the site.

The rock cairns, designated Features 1 and 2, and the other cultural material occur in an area approximately 22 meters in diameter. Feature 1 consists of about 25 quartzitic rocks while Feature 2 is comprised of three large (50 cm in diameter) rocks. The cairns are less than one meter in diameter and are well-sodded in. The small size of the cairns and the lack of deposition argues against their function as a burial or covering for a cache pit. The remaining cultural material consists of three burned rocks, a chert tertiary flake and a large plate chalcedony biface. It is speculated that these items were used for a specific task, perhaps hunting-related. Within this context, the cairns could have been used to support wood poles, such as for a drying rack.

Unfortunately, such speculation will remain untested since it is unlikely that the site will yield any additional information due to lack of deposition and almost totally eroded condition. As a consequence the site is not considered eligible for nomination to the National Register of Historic Places and no further work is recommended.

39DW103:

This site consists of a scatter of bone, burned rock and lithic materials located on the slope of a ridge (see Figure 39). Wave action has truncated the margins of the ridge producing a steep cutbank. Bone fragments were exposed in the cutbank at 1.5 m B.S., but most of the cultural materials were found along the edge of the slope near the cutbank. The location of this site is somewhat unusual due to the slope of the ridge which varies between 5 and 10 degrees. The slope flattens out towards the cutbank and it seems likely that the flatter area was more extensive prior to the impoundment of Lake Oahe and the subsequent truncation of the slope. Based on this it seems probable that much of the site is gone.

The site presently covers an area measuring approximately 50 m east-west by 40 m north-south. Surface visibility varies from 20 to 80 percent with the higher visibility occurring along the steeper slopes. Cultural materials observed at the site include 36 flakes, two utilized flakes, four cores, a biface and burned rock and bone. Lithic raw materials include smooth gray and yellow/red varieties of Tongue River silicified sediment, coarse quartzite and miscellaneous chert and agate/chalcedony. One concentration of burned rock, cores and flakes was also observed. The bone fragments were either found imbedded within the cutbank or on the talus slopes below the cutbank. The steepness of the cutbank prevented a close visual examination, as a result additional cultural material could have been exposed.

The presence of buried bone, concentration of cultural material and an overall exposure of cultural material along the cutbank indicates a high probability that additional buried cultural deposits are present which could yield additional significant information on the prehistory of the region. Test excavations are recommended to determine the age, extent, content and integrity of the site in order to establish its research potential and significance. Until these recommendations are carried out

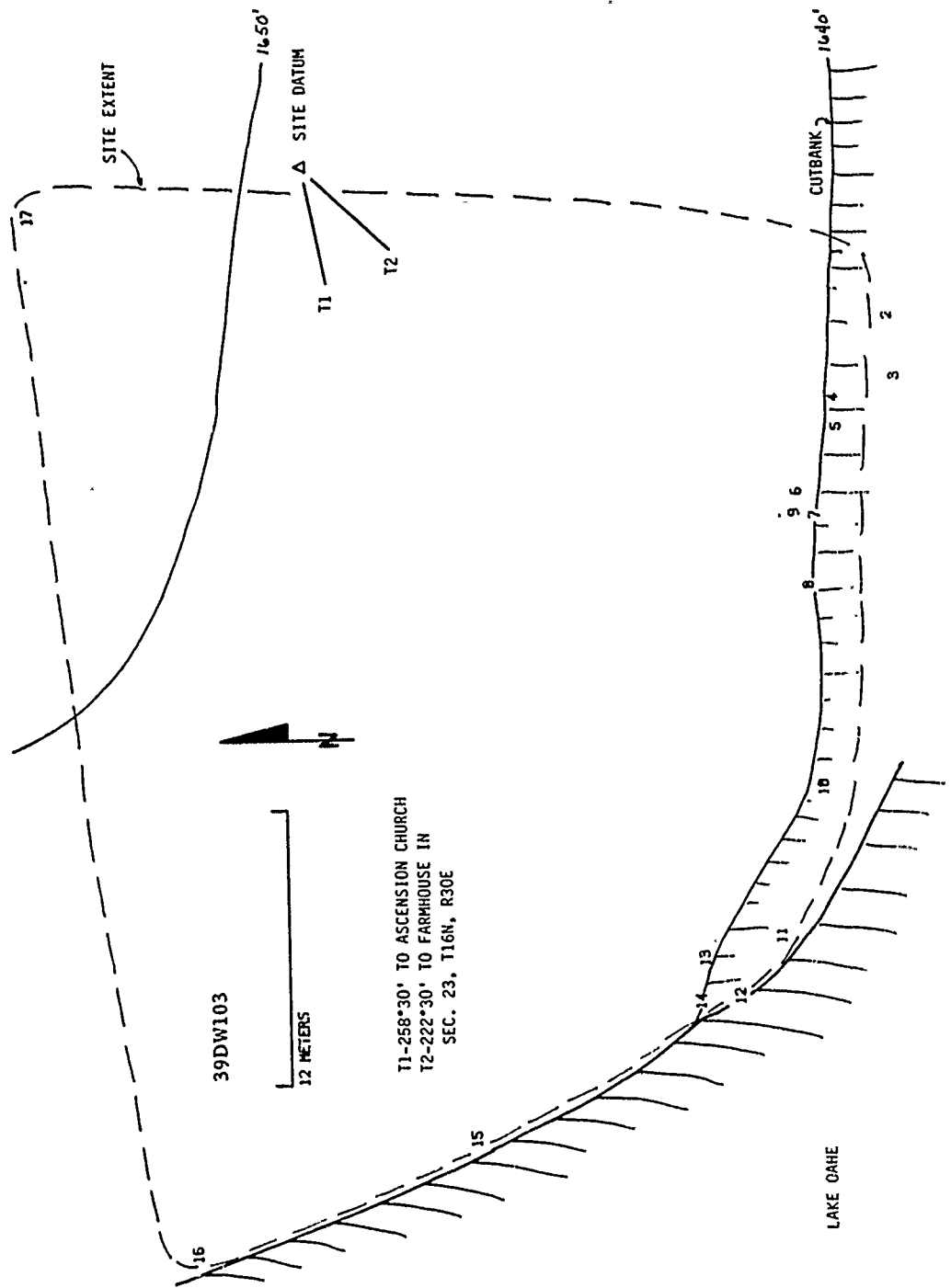


Figure 39. Map of 39DW103.

the site must be considered potentially eligible for nomination to the National Register of Historic Places.

39DW104:

This site may represent an allotment homestead, a small community or a school. It is located on the top and near the edge of a bluff overlooking the Moreau River valley. The surface and slopes of the area are covered with mixed prairie grasses which have an overall surface visibility of approximately 25 percent. Scrub oak and other hardwoods are scattered along the slope of the bluff. No structures are shown at this location on the GLO plats, the 1947 Corps of Engineers map or the 1968 USGS Moreau SE topographic map.

This site consists of two foundations, eleven depressions and an artifact scatter which are distributed over an area measuring approximately 270 m north-south by 100 m east-west (see Figure 40). Both of the foundations were constructed of poured concrete and cobbles. One of the foundations is complete, the other is a series of fragments. The foundations and artifact scatter occur in the northern half of the site while most of the depressions are located in the southern half.

A large artifact scatter was observed on the site including tin cans (lard, food and sardine), bottle glass, plate glass, a whetstone, buttons, galvanized metal fragments, boards, barrel fragments, leather fragments, rubber fragments, Euroamerican ceramics, bricks, enamel ware, bone and a collected. The two bottles were manufactured by the Illinois Glass Company (1916-1929) and a prescription bottle manufactured by the Owens-Illinois Company (1929-1954) were collected from this site. Two catlinite pipe fragments were also collected from the surface of the site as well as seed beads, bugle beads, seed beads with copper wire embedded in them and turquoise fragments were recovered from a 5 square meter area around an ant hill.

The chain of title search indicates that the land was originally a part of Allotment C. R. 30 issued as a trust patent on March 31, 1906 to Louis Black Spotted Horse. According to the Dewey County records the entire section was annexed for school lands by the State of South Dakota, Aberdeen Land District on June 30, 1910. The Cheyenne River Sioux Tribe records do not mention this transaction and state that the land was later transferred to Narcisse Benoit in 1952. In 1957 the land was incorporated into the Lake Oahe take area.

The presence of the beads, turquoise fragments and catlinite pipe fragments may suggest an earlier component than the majority of the trash scatter which appears to date between 1905 and 1920. The concentration of beads and turquoise on the ant hill may represent a crafts workshop area, a burial or simply the disintegration of a beaded object.

Subsurface testing should be conducted in order to determine the function, the age and number of components present, and the site's eligibility for nomination to the National Register of Historic Places. Testing of the area surrounding the large depression, the foundation, the concentration of beads and the location of the catlinite pipe fragments is particularly important to the understanding of site function and

occupation(s).

39DW105:

This site consists of a single shallow depression situated on the edge of a bluff overlooking the Moreau River valley (see Figure 41). Mixed prairie grasses cover the top and slope of the bluff providing approximately 10 percent surface visibility. A cultivated field occurs immediately to the east of the site. The depression is marked by a tall and dense growth of grass. Scrub oak are scattered along the slope of the bluff.

The depression is approximately 5 m north-south, 4 m east-west and 50 cm deep. No other cultural materials were observed and no structures are shown in this location on any GLO plats, the 1947 Corps of Engineers or 1968 USGS Moreau SE topographic maps.

The chain of title search indicates that this land was a part of Allotment 58 issued as a trust patent to Simon Pretty Bear on March 31, 1906. It was then sold to Louis Benoit in 1909 and with the patent finally approved on February 12, 1945. It was acquired by the U. S. Government in 1957 for the Lake Oahe take area.

The remains of an isolated depression at this site with no associated cultural materials, no indications of buried cultural material exposed in the cultivated field or two track road, and the lack of documentary evidence for a structure at this location argues for a non-habitation function for this depression (e.g., gravel test pit) and a recommendation of no further work. As a result the site is not considered eligible for nomination to the National Register of Historic Places.

39DW106:

This is a small prehistoric artifact scatter eroding from the edge of a bluff overlooking the Moreau River valley (see Figure 42). The vegetation is primarily mixed prairie grasses with some sagebrush and an overall surface visibility of approximately 10 percent. Various hardwoods occur on the slope of the bluff and slumped areas to the northwest.

The site consists of 15 flakes and three burned rocks situated in an area measuring approximately 4 by 5 meters. The flakes were made from smooth gray and yellow/red Tongue River silicified sediment and various cherts, chalcedonies and quartzites. No additional cultural materials are believed to occur at this site due to the uniform erosion along the edge of the bluff. As a result this site is considered to be all that remains of a small one-time activity. The site is not expected to yield any additional significant information and should not be considered eligible for nomination to the National Register of Historic Places.

39DW107:

This prehistoric artifact scatter is located on the same bluff as 39DW106 and has the same vegetation and surface visibility. This site is much larger and measures approximately 200 m east-west and is probably at least 20 m north-south but the site's exact extent is not known (see Figure

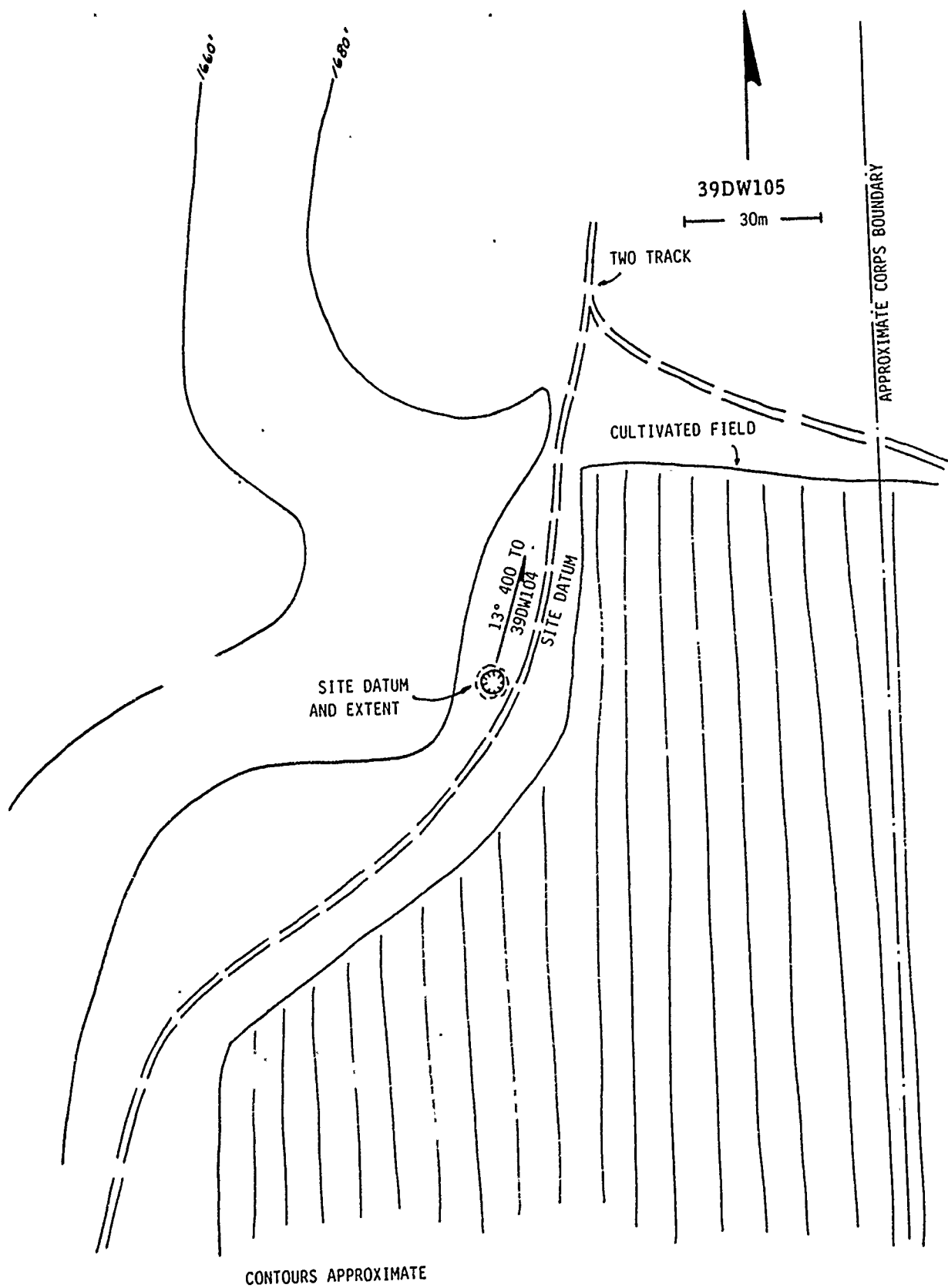


Figure 41. Map of 39DW105.

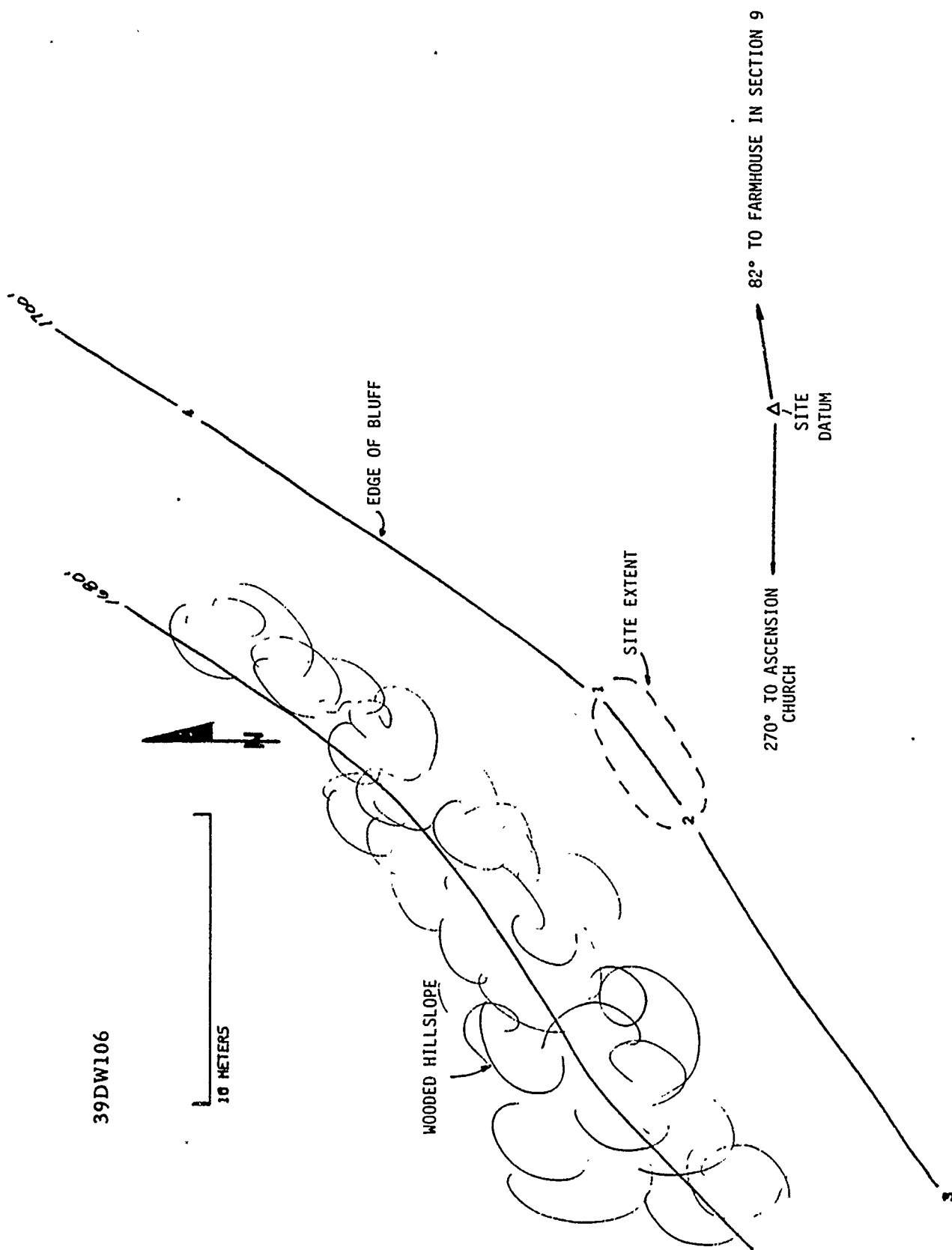


Figure 42. Map of 39DW106.

43). Erosion of the bluff edge has produced a stratigraphic profile and exposed a buried soil at 1.10-1.25 m B.S. Bone fragments and flakes were found to occur along this cutbank to at least one meter below the surface.

The cultural materials occurring on the bluff top are uniformly distributed and consist of a small rock cairn, flakes, tested cobbles/core and burned rock. The raw material types present at this site are also similar to 39DW106 and may represent the testing and reduction of local raw materials.

It is evident that buried cultural materials are present at this site. These materials could be quite old due to their proximity to an underlying paleosol and the lower alluvial sands and gravels. Test excavations are recommended to determine the extent, age and nature of these buried cultural materials in order to establish the site's potential to yield additional information. As a result the site should be considered potentially eligible for nomination to the National Register of Historic Places.

39DW108:

This site consists of three rectangular depressions located on top of a small ridge above an intermittent drainage (see Figure 44). The top of the ridge is densely covered by mixed prairie grasses with a surface visibility of approximately 10 percent. This site is not shown on any GLO plats, the 1947 Corps of Engineers topographic map or the 1968 USGS Moreau SE quadrangle.

The three depressions are arranged parallel to one another and possibly represent graves. Two depressions are 1 X 2 m in size while the third is 2 X 2 m in size. The depressions average between 20 and 40 cm in depth. The longest dimension is oriented at approximately 110 degrees from true north. One of the depressions contained a 2 x 4 inch by 1 foot piece of lumber containing wire nails.

The chain of title search makes no mention of any burials but states that this land was a part of Allotment 23 issued as a trust patent to Pete Three Legs on March 31, 1906. Upon his death on March 23, 1928, it was transferred to numerous heirs and then reconsolidated when acquired by the U. S. Government in 1957 for the Lake Oahe take area.

The function of the depressions is not known. There is no record of a cemetery at this location in the burial report compiled by the USDI (1951b) although this report was less concerned with unofficial or family cemeteries located above the impoundment level. Until the function of the depressions can be ascertained through test excavations, additional archival research or oral interviews, the site should be considered potentially eligible for nomination to the National Register of Historic Places.

39DW109:

This small prehistoric site consists of a relatively dense scatter of flakes and a hearth eroding from the edge of a bluff (see Figure 45). The top of the bluff is covered with a thick mat of prairie grasses providing

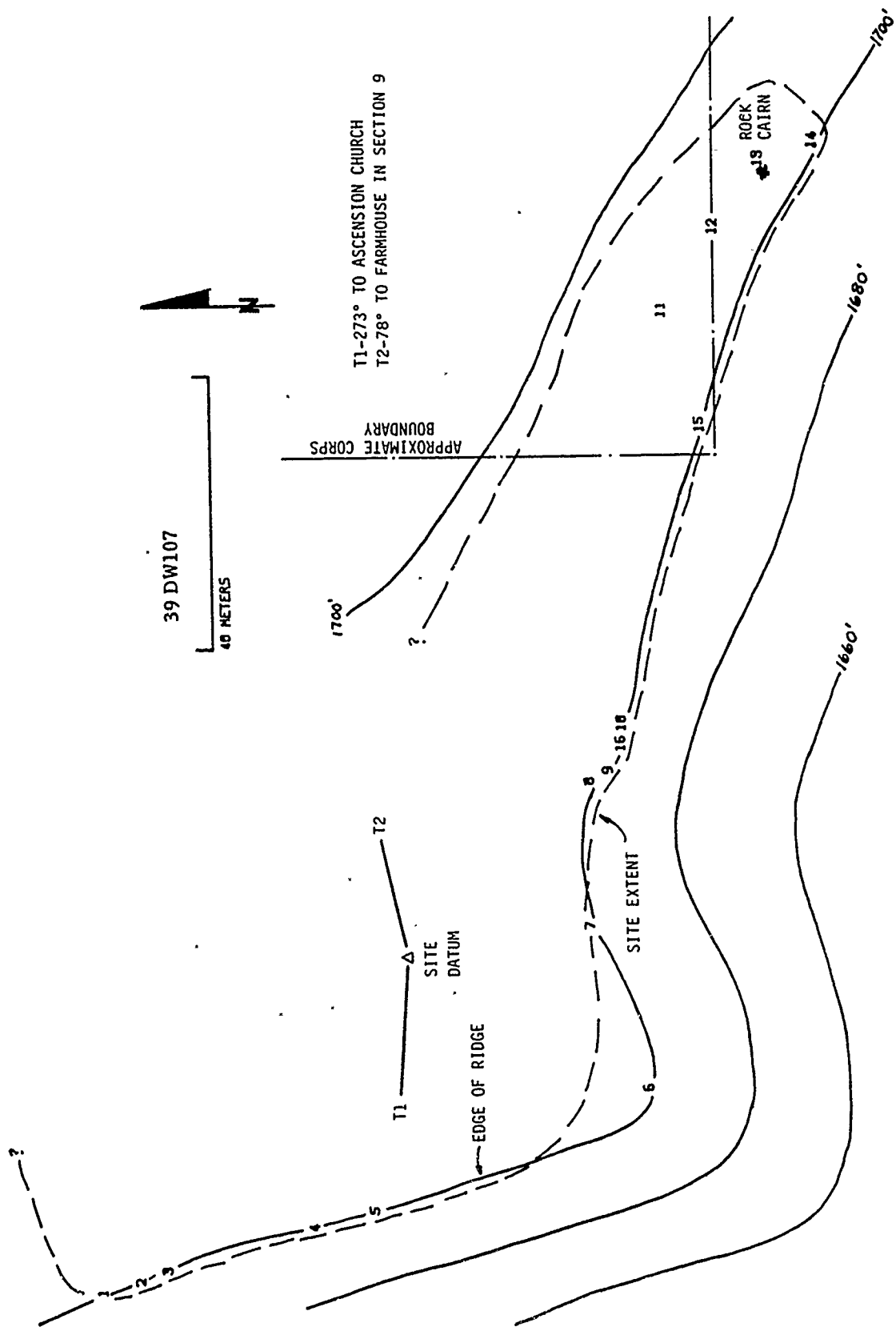


Figure 43. Map of 39DW107

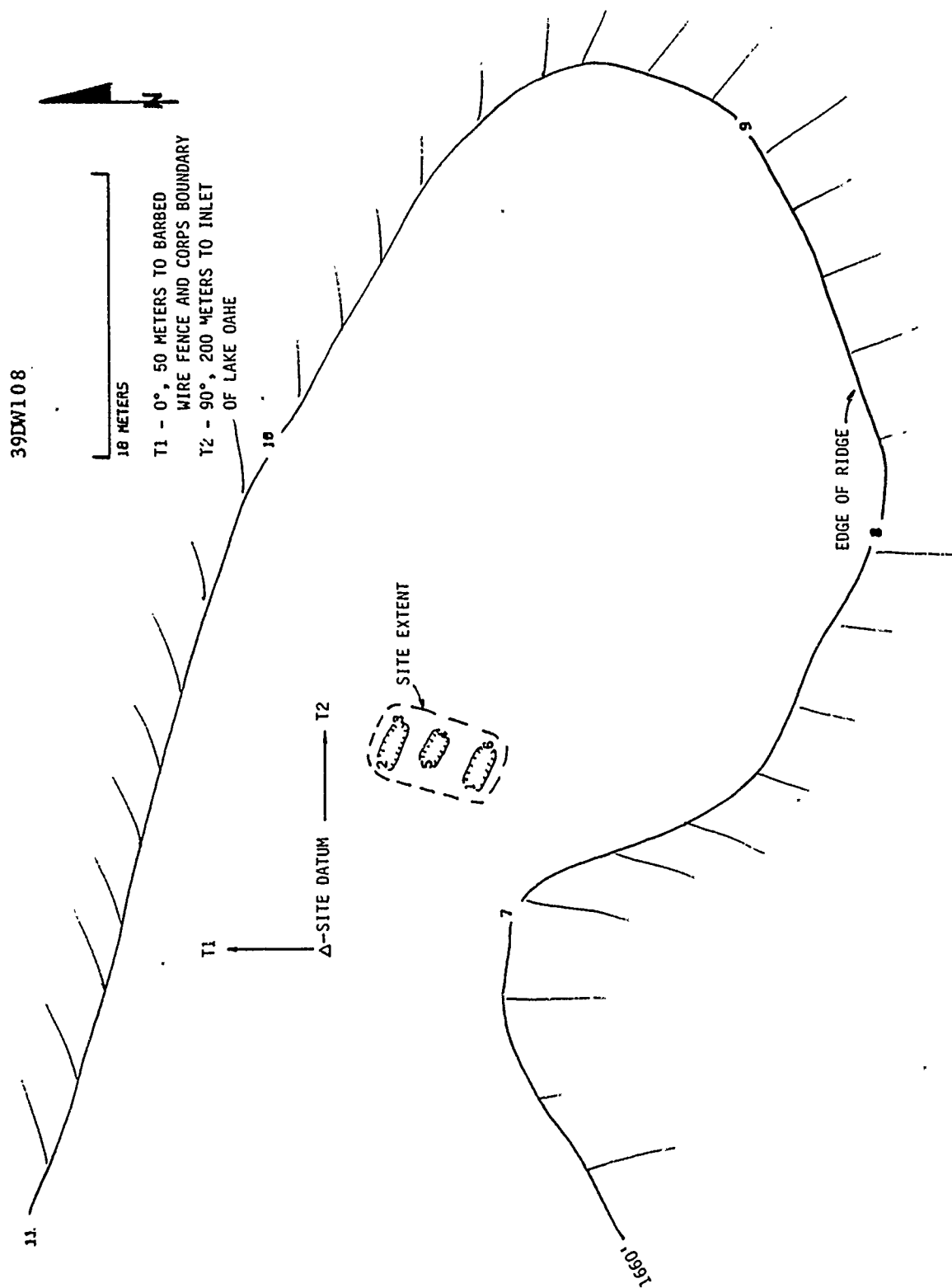


Figure 44. Map of 39DW108.

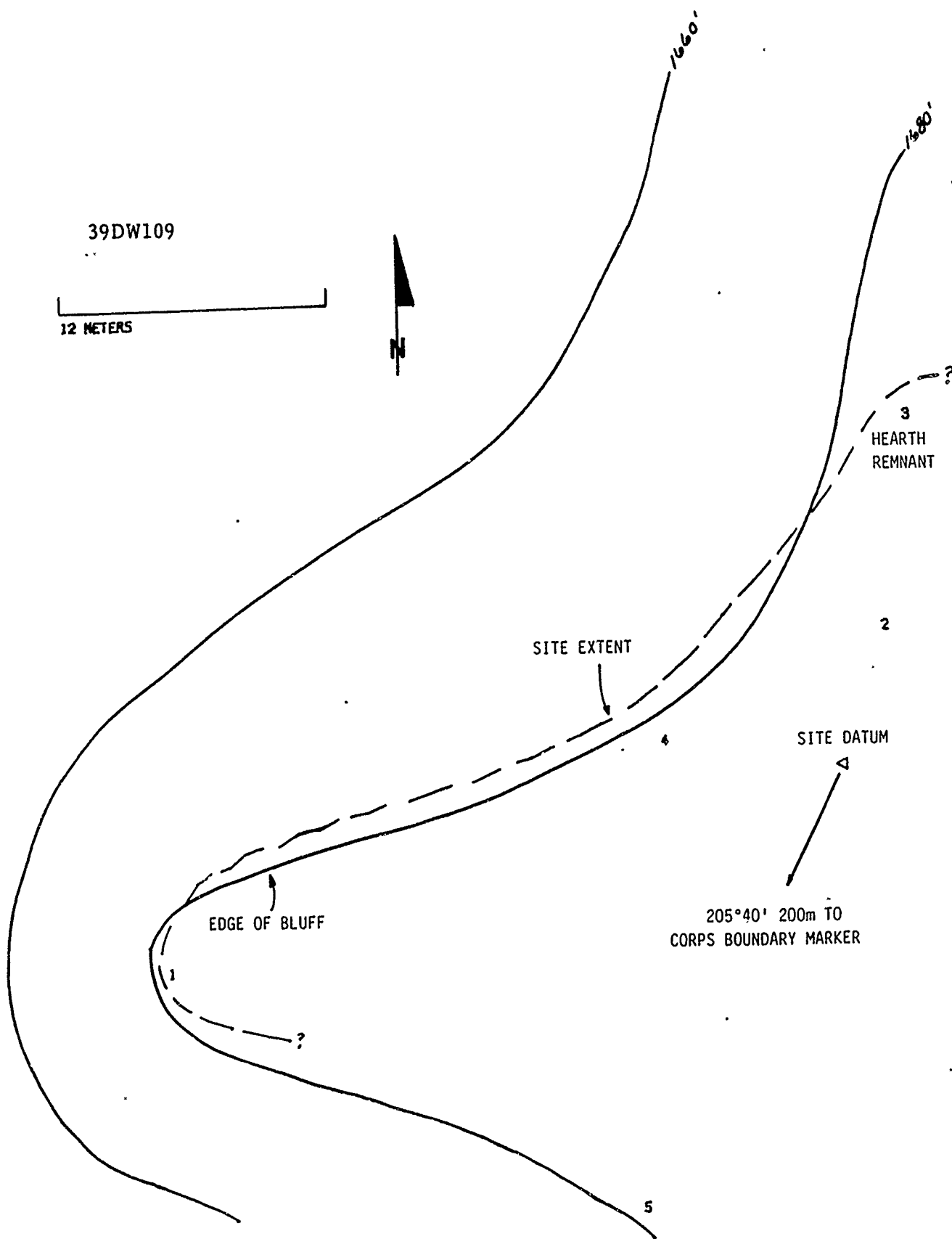


Figure 45. Map of 39DW109.

only about 15 percent visibility of the ground surface. The edge of the bluff is more eroded with a surface visibility of 50 to 75 percent. The cultural materials are exposed along approximately 40 m of the bluff edges. The location of these materials suggests that they may be derived from a buried cultural level approximately 20 cm B.S. As a result, a buried component at the site could extend some distance away from the bluff edge.

Test excavations are recommended to determine if a buried cultural level is present, its extent and age. Excavation of the hearth should allow for radiometric dating. Until such recommendations can be accomplished, this site should be considered potentially eligible for nomination to the National Register of Historic Places.

39DW110:

This site is a large artifact scatter located on top of a large bluff (see Figure 46). The bluff could be more appropriately called a butte since it has been isolated from the surrounding hills by shifts in the Moreau River channel. The top of the bluff is covered by various prairie grasses, while a number of trees and shrubs occur in protected pockets along the slopes of the bluff. The Moreau River bottomlands surround the bluff on three sides which formerly contained extensive cottonwood and mixed hardwood forests. Most of this area was inundated during the inventory due to high water levels.

This site is very large measuring approximately 380 m north-south by 150 m east-west. Cultural materials observed at the site consists of three possible rock cairns, a possible deflated hearth, thin body sherds, bone fragments, burned stone, flakes and various chipped stone tools. The latter consist of two bifaces, three endscrapers and a chopping tool. The lithic raw materials consist of smooth, gray Tongue River silicified sediment, coarse quartzite and miscellaneous chert and chalcedony.

The ceramics consist of thin (4-5 mm) buff-colored body sherds, some of which have incised or trailed lines. Although these are not completely diagnostic, they suggest a Plains Village occupation, possibly Extended Coalescent given the lack of Knife River flint (see e.g., Ahler 1977b, Sanders et al. 1987). Except for the deflated hearth and cairns no other features (e.g., depressions) were observed. As a result, the site appears to be an "off-village" camp utilized by some Plains Village group.

The site is almost completely intact with cultural material exposed only along the margins of the bluff where erosion has exposed the soil and surface visibility approaches 50 percent. The rest of the bluff is covered by a dense mat of prairie grasses where surface visibility is extremely limited varying between 0-5 percent. Since there is a relatively large amount of cultural material occurring around this area, it seems highly likely that additional buried cultural deposits and features are present.

Test excavations are recommended to determine if buried cultural deposits are present and to establish their age, extent and contents. It is believed that the site is a Plains Village campsite and little is known of these types of sites. For this reason, the site is considered potentially eligible for nomination to the National Register of Historic Places.

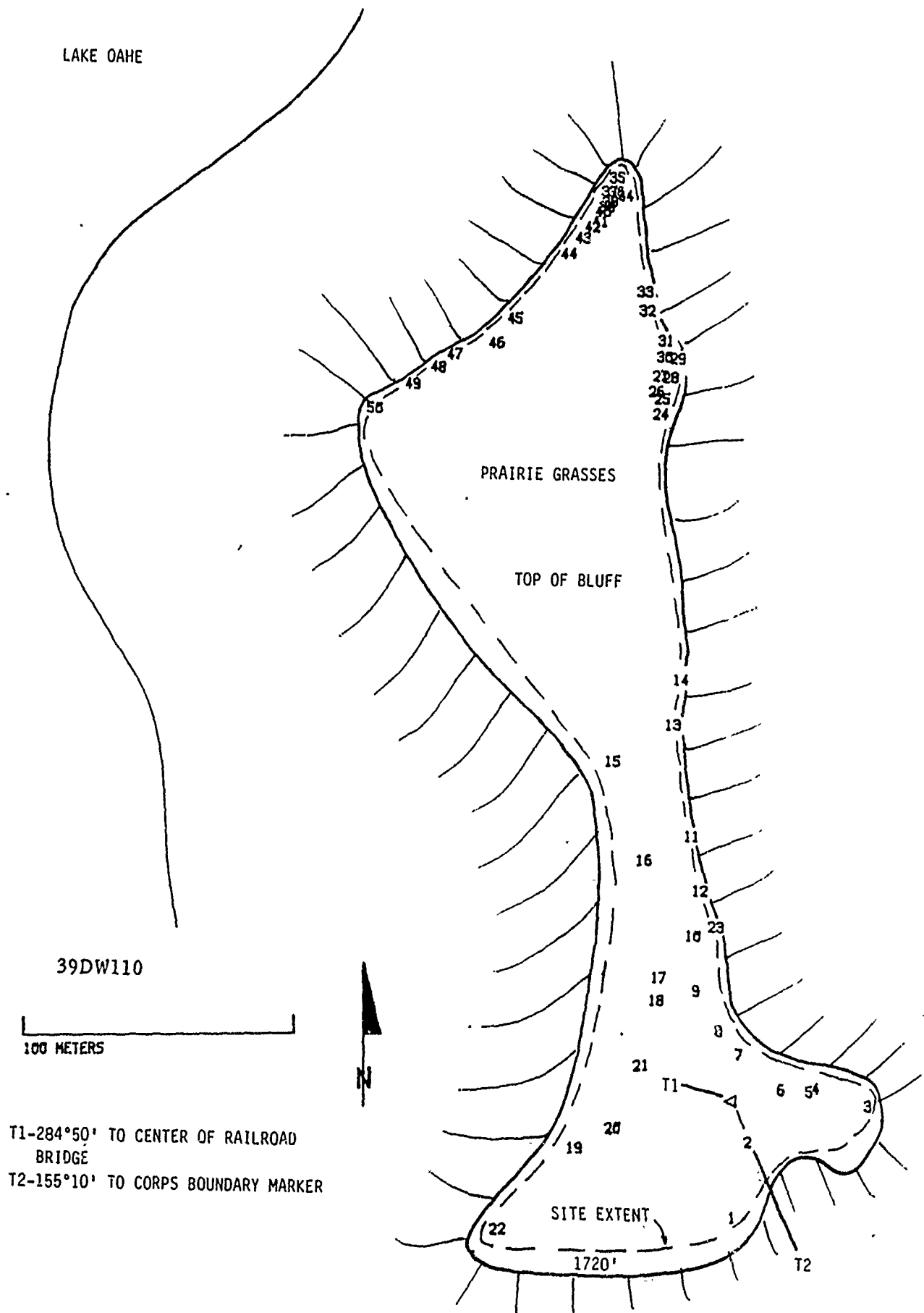


Figure 46. Map of 39DW110.

39DW111:

This is a small and diffuse prehistoric artifact scatter located on the lower, south-facing slope of a large bluff. The surface of the site area has been exposed through over-grazing revealing scattered alluvial gravels and weathered shale bedrock. Vegetation consists of short prairie grasses providing a surface visibility of approximately 50 percent. The presence of a prairie dog town within and east of the site area is also responsible for a loss of vegetation.

The site is comprised of one utilized flake and five miscellaneous chert flakes which are scattered over an area measuring approximately 40 m north-south by 20 m east-west (see Figure 47). No artifacts were found in the prairie dog backdirt piles. Due to the small assemblage size and lack of deposition, no further work is recommended and the site should be considered not eligible for nomination to the National Register of Historic Places.

39DW112:

This site is the remains of the original Promise townsite (see Figure 48). The townsite is located on the original Chicago, Milwaukee, St. Paul and Pacific railroad crossing of the Moreau River. The site is situated on a low terrace where Virgin Creek enters an old oxbow of the Moreau River. Much of the area is densely covered by tall native grasses and other introduced plants such as Russian thistle. Cottonwoods and various hardwoods occur on the margins of the site. Surface visibility was limited to approximately five percent.

On the 1947 Corps of Engineers topographic map, twelve buildings are shown at Promise. Ten are shown on the 1951 U.S.G.S. Promise quadrangle. On the 1951 map the northeasternmost building is a school. The townsite presently consists of 15 depressions of varying sizes, a standing log cabin (Figure 49), the abandoned railroad grade and a cultural material scatter encompassing an area measuring 360 m north-south by at least 250 m east-west. Most of the cultural material are quite large, such as car bodies, car parts and other large pieces of metal. Other observed items included bottle glass, glassware, ceramics, metal and cut lumber. Most of the depressions occur in the northeastern corner of the site. This is in contrast to the topographic maps cited above where only one structure occurs east of the railroad grade. The four westernmost structures were not found despite an extensive search and have probably either been silted in or obscured by the dense vegetation. A plaque placed in 1977 in the southern part of the site notes the federal, state and local cooperative effort to revegetate this area.

The standing log cabin shown in Figure 49 is 5 meters north-south by 4 meters east-west. The one-room cabin was constructed with horizontally laid, hewn logs with square notch corners (see e.g., Torma and Ruple 1982:Figure 4-2). Wood and mortar was used for chinking with the wood often held in place by round wire nails. A framed doorway occurs on the north with framed windows occurring in the middle of the three other walls. The interior was covered with a cut lumber floor, remnants of which can be seen in Figure 49. The flat roof was constructed of round wood logs as the main beams supported by one log cross beam in the middle, shown as

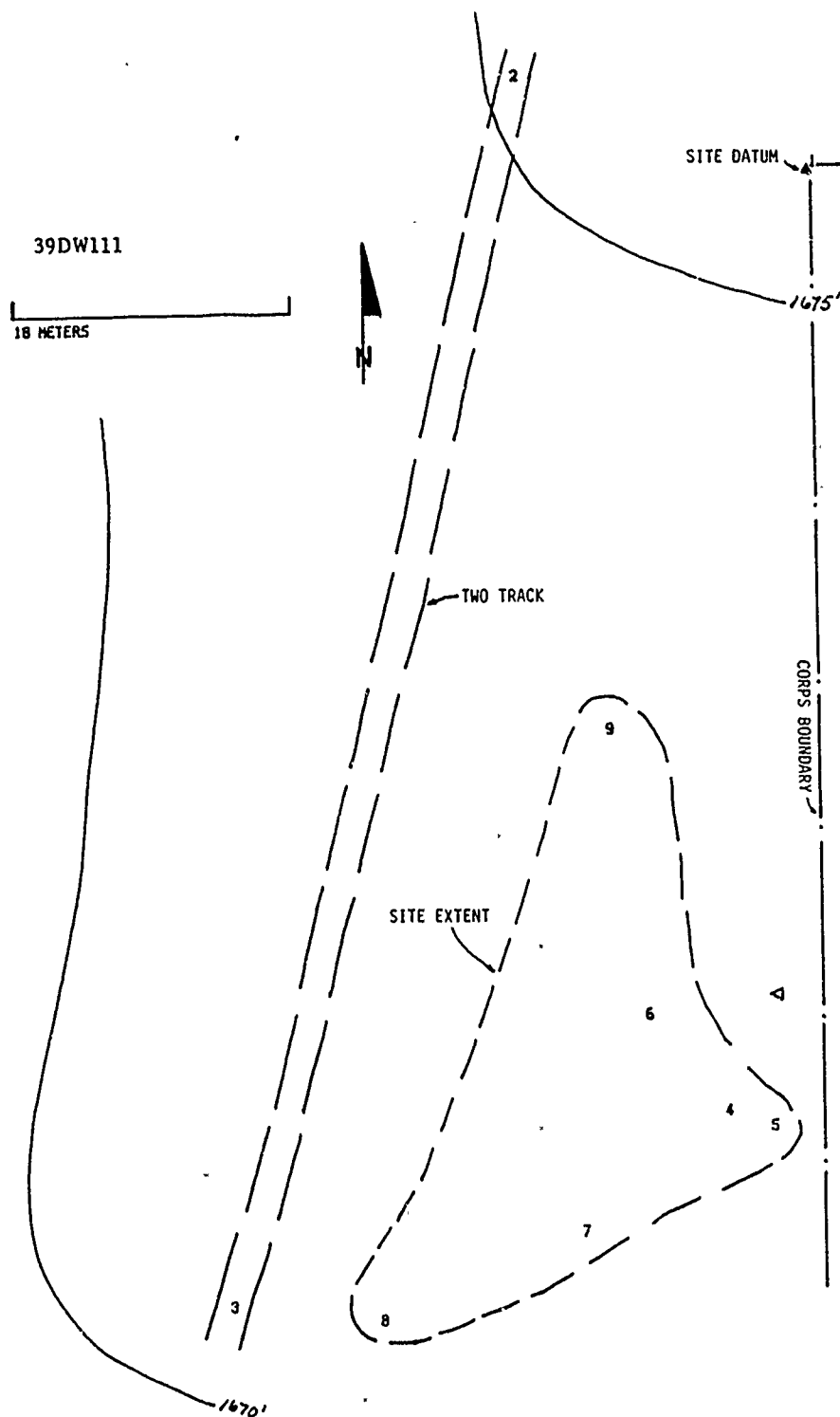


Figure 47. Map of 39DW111.

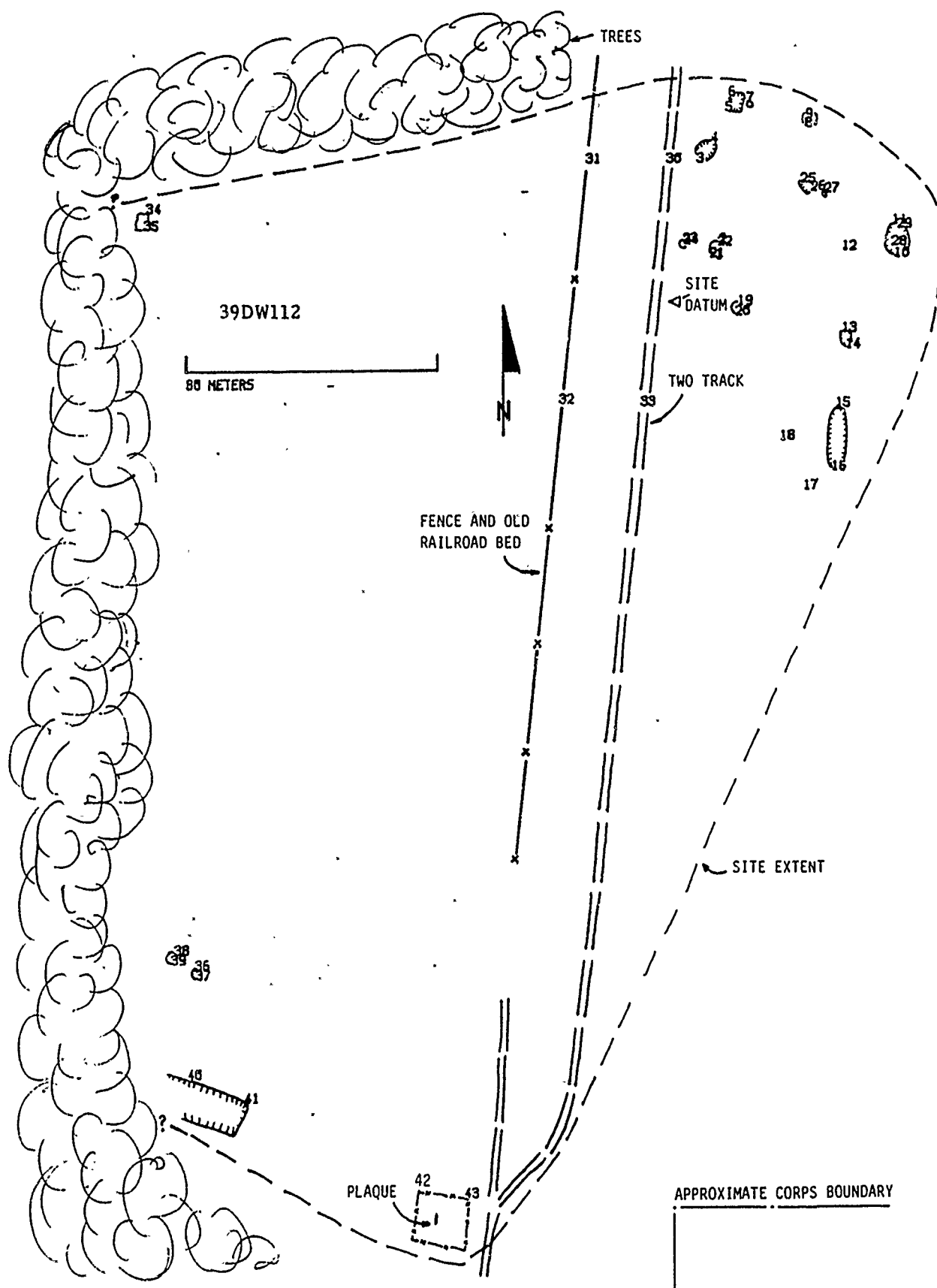


Figure 48. Map of 39DW112.



Figure 49. Exterior (upper) and interior (lower) views of log cabin at 39DW112.

partially collapsed in the lower part of Figure 49. Cut lumber was the principle roofing material.

The chain of title search indicates that this land was a part of Allotment 222 issued as a trust patent on March 31, 1906 to Louise Four Bear. On the same date, she recorded this property with the Dewey County Register of Deeds (Patent Record No. 6, No. 43165). She died on July 15, 1931 and left the land to numerous heirs. The Dewey County records note that the Chicago, Milwaukee, St. Paul and Pacific Railroad Company abandoned the original grade on September 1, 1954 due to the impoundment of Lake Oahe and then abandoned the present grade approximately one-half mile to the west on April 27, 1973 (Deed Record No. 28, No. 52697). Although a school is shown on the 1951 topographic map, an easement contract conveying the land to the Timber Lake School District No. 2 was not recorded until April 10, 1956. In 1957, the land was acquired by the U. S. Government for the Lake Oahe take area. At this time most of the buildings were probably removed to the present townsite of Promise approximately one-quarter mile to the southwest.

Cudmore and Nelson (1985:28) state that Promise was in existence prior to the construction of the railroad. The railroad was built in 1910 (Robinson 1930:386) and an official post office was later established on August 8, 1911 (Phillips 1975:18). The town was named for the priest Wahoyapi (John Promise) and a Christian mission was established there in the late 1880s (Cudmore and Nelson 1985:28) although no buildings are shown on the 1898 GLO plat.

The site should be tested in order to determine whether or not buried cultural deposits that relate to this early period of occupation and subsequent periods of occupation are present. Archival research and informant interviews should be conducted in order to assist in determining the eligibility of the site for nomination to the National Register of Historic Places.

39DW113:

This small prehistoric artifact scatter is located on a valley slope approximately 50 m southwest of Ducharme Creek. The site area is covered by prairie grasses although a dense cottonwood and hardwood forest is present along the creek. Surface visibility was estimated at 30 percent.

The site is comprised of five flakes of varying raw material types scattered over an area measuring 45 m north-south by 10 m east-west (see Figure 50). Deposition is limited as numerous exposures of weathered shale bedrock occur in and around the site area. As a result, it is unlikely that any additional significant cultural deposits are present. The site is considered not eligible for nomination to the National Register of Historic Places and no further work is recommended.

39DW114:

This site is the apparent remains of a farmstead situated on a terrace next to Ducharme Creek. The site area is covered with mixed prairie grasses. The creek bottoms along Ducharme Creek contain mixed hardwoods and shrubs. Surface visibility was estimated at approximately 20 percent. The

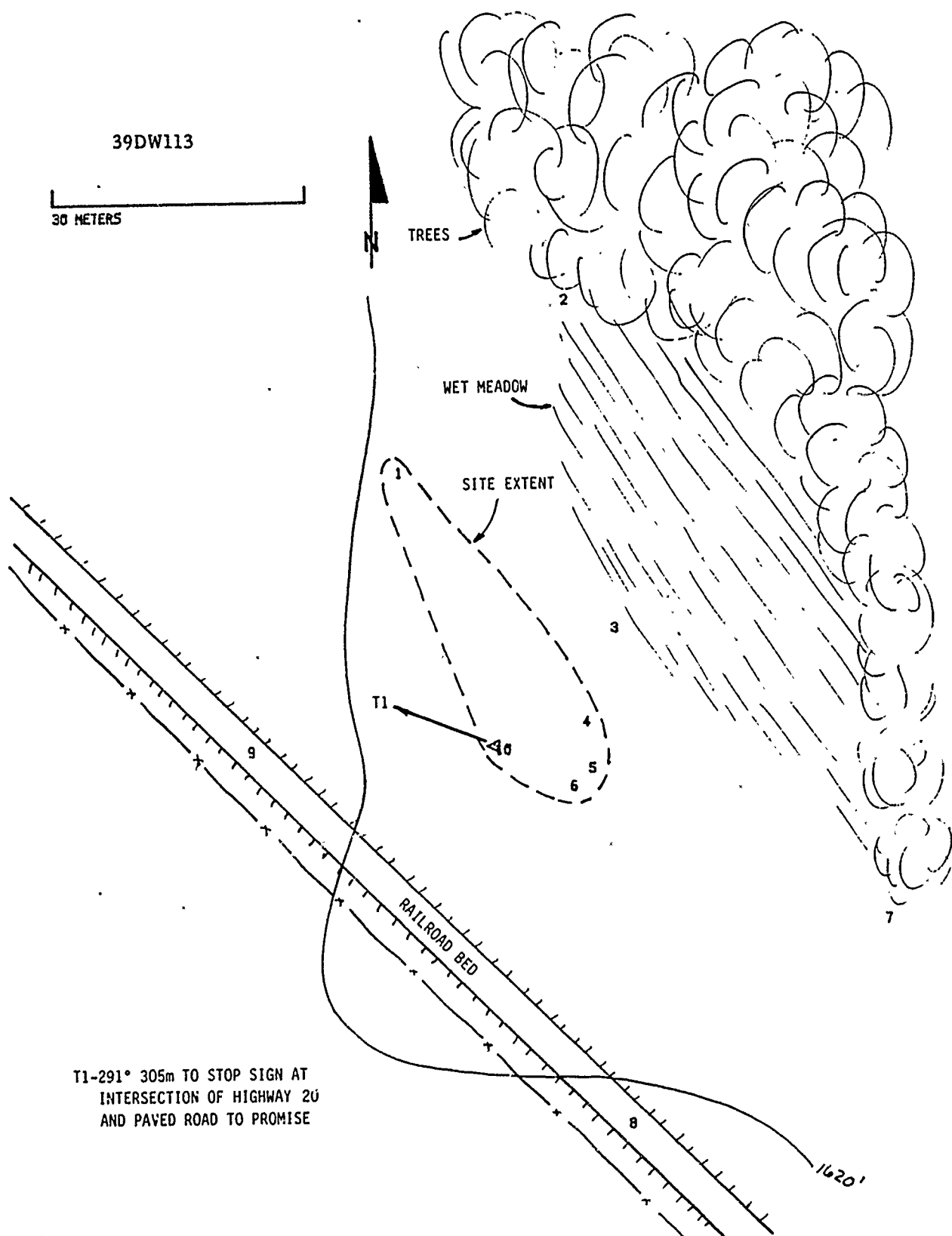


Figure 50. Map of 39DW113.

site occupies an area measuring approximately 140 m north-south by 320 m east-west (see Figure 51).

Two structures are shown on the 1947 Corps of Engineers topographic map. Their location generally corresponds to the location of a large lumber pile (probably collapsed structures) in the eastern area of the site. One of these structures is also shown on the 1951 USGS Promise topographic quadrangle. Another structure is shown approximately 150 m to the west on the 1951 map. This latter structure corresponds to the location of a large depression along the northwestern margin of the site.

In addition to the large depression and collapsed structures, three other depressions and a large amount of historic debris were observed. The remains of a "Great Majestic" wood burning stove were located in one of the features. Boards, car parts, license plates (1939, 1947, 1952), harness leather, wire nails, sanitary cans, ceramics, glassware, bottles (predominantly screw and crown top), wire, an enamelware tea kettle, machinery parts and bone were observed in the dump area. The dump area is eroding into the reservoir at the south end of the site. A cultural material scatter resulting from this erosion was present on the beach at the time of the survey. A 1912 General Service button (United States Army) was also found and collected.

A mean manufacturing date of 1940, based on bottle glass, was calculated for this site (Hill 1982:292). This date was calculated from three collected bottles and five bottles analyzed in the field. The three collected bottles are a Coca-Cola bottle (Owens-Illinois 1929-1954), a proprietary bottle (unknown 1906-1930) and a Chey-Rock beverage bottle (Owens-Illinois, 1949). Manufacturers and dates of non-collected bottle glass items include Owens-Illinois (1929-1954); Fairmont Glass Company (1945-1960); Hazel-Atlas (1920-1964); Illinois Glass Company (1916-1929); and Armstrong Cork Company (1938-1969).

The chain of title search indicates that this land was a part of Allotment 3274 issued to William Ducheneaux as a trust patent in March 5, 1926. He died in February 18, 1932 and left the land to numerous heirs. The land was consolidated and acquired by the U. S. Government in 1957 for the Lake Oahe take area.

Based on the relatively recent date of the site, it is not believed to be eligible for nomination to the National Register of Historic Places and no further work is recommended.

39DW115:

This historic site consists of a stone foundation and historic cultural material scatter located on top of a low bluff overlooking the Moreau River valley (see Figure 52). No structures are shown at this location on the GLO plats, 1947 Corps of Engineers or 1951 USGS topographic maps. The closest structures noted on the last two maps are St. John's Church and cemetery which were established in 1911 (Duratschek 1947:238). The church and cemetery were shown on these maps located approximately 400 m to the west on the floodplain which was inundated during the 1986 investigation.

[illegible]

Figure 51. Map of 39DW114.

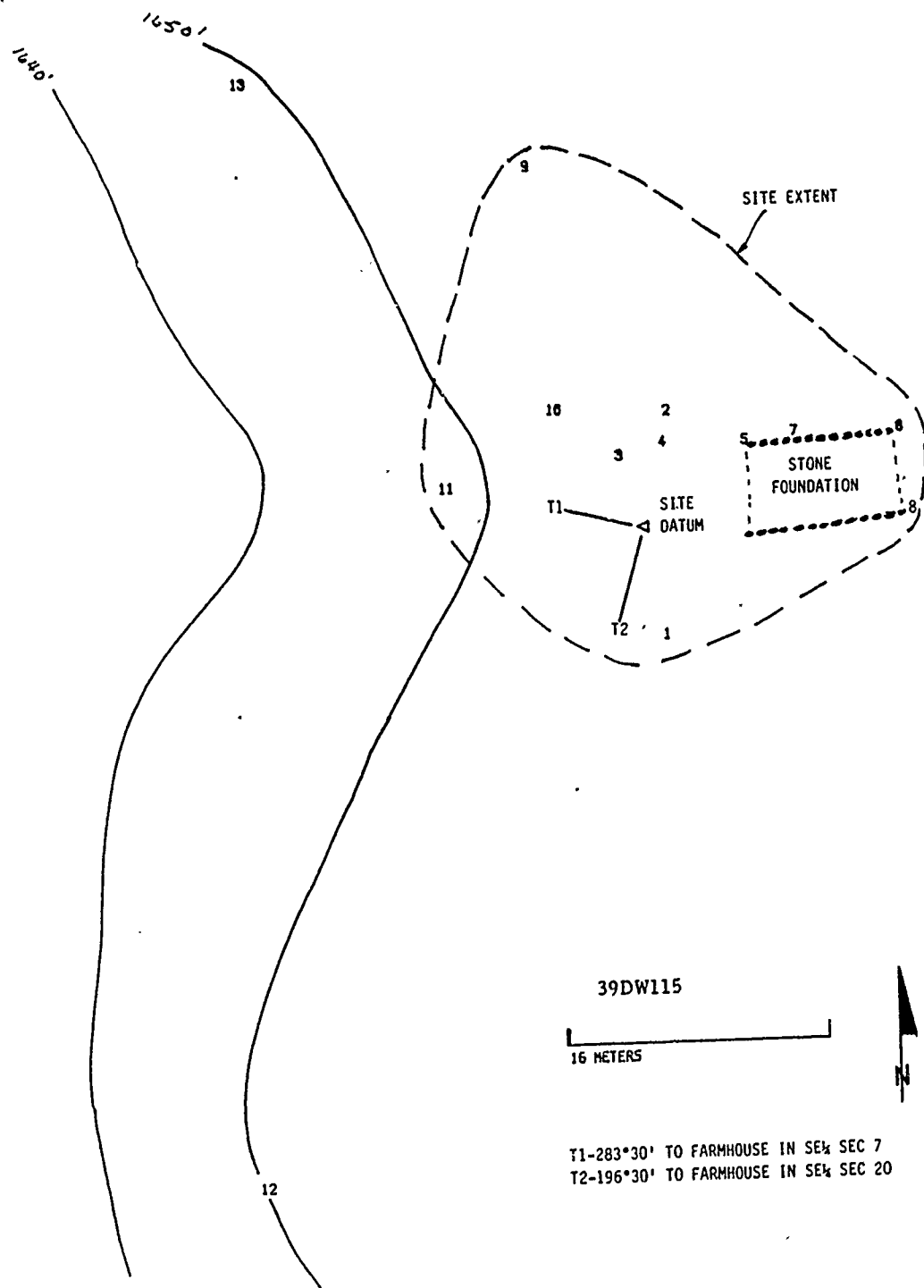


Figure 52. Map of 39DW115.

At this time, the top of the bluff was covered by mixed prairie grasses with a surface visibility of approximately 20 percent. Weathered shales underlie the grasses and are exposed on steeper slopes. However, some deposition may be present.

The site consists of the remains of a late nineteenth-early twentieth century occupation farmstead of presumed Sioux affiliation. A mean manufacturing date of 1900, based on bottle glass, was calculated for this site (Hill 1982:292). The date was calculated from 14 bottle glass elements collected from this site. Ten of the bottle glass elements are dated based on their purple coloration (1880-1917). Two of the bottle glass elements were manufactured using the automatic process and are also purple in color (1903-1917). One bottle neck is dated 1880-1900 based on the height of the mold seam. A single bottle produced in a cup-bottom mold and embossed "MOBRIDGE CARBONATING /CO./ MOBRIDGE, S.DAK." on the front panel and "I.G.Co.488" is dated 1880-1909 based on information about the Illinois Glass Company available in Toulouse (1971:264).

One stone foundation remnant approximately 10 m by 6 m was observed as well as a general trash scatter. Cultural material consisted of kitchen, domestic, architectural and some occupational items. An area containing mostly bottle glass and glassware is located on the eastern margin of the site. These materials are located in an area measuring approximately 32 m in diameter.

The chain of title search indicates that this land was a part of Allotment 205 issued as a trust patent to Henry Hodgekiss on March 31, 1906. It was conveyed to the Cheyenne River Sioux Tribe on October 30, 1919. It was then deeded to Anthony Dale Ducheneaux on June 4, 1942 who held it until acquired for the Lake Oahe take area in 1957.

The date obtained from the bottle glass is contemporaneous with the beginning of allotment in the Cheyenne River Reservation. Therefore, there is a potential to obtain information about a period of significant change in lifestyle and possibly settlement pattern on the Reservation. This site should be tested in order to determine whether or not intact subsurface deposits are present. In addition to the testing, archival research and informant interviews should be conducted. The results of the testing, archival research and informant interviews should be compiled to determine the eligibility of the site for nomination to the National Register of Historic Places.

39DW116:

This site consists of a Pratt truss type railroad bridge spanning the Moreau River (see Figure 53). The bridge is constructed of steel and measures approximately 126 m north-south by 6 m east-west. The bridge is supported by four concrete footings. The rails and ties are no longer present and two support beams have been dismantled.

The chain of title for this site is the same as 39DW112. Pertinent sections of the search are that the Chicago, Milwaukee, St. Paul and Pacific Railroad Company abandoned the original grade located approximately 700 m to the east at the old townsite of Promise on September 1, 1954 due to the impoundment of Lake Oahe. The records also show that the present

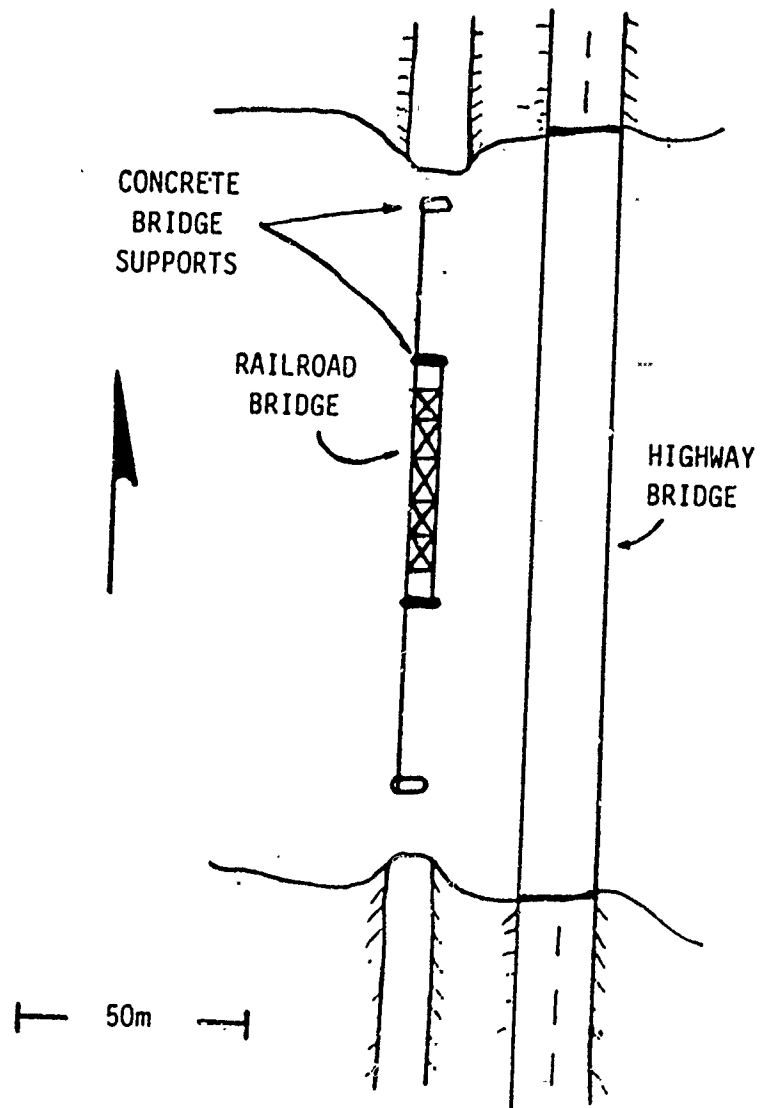


Figure 53. Map of 39DW116.

railroad grade and bridge was abandoned on April 27, 1973.

The specific age of the bridge and the name of its manufacturer are unknown, however, it was probably built in the mid 1950s as a result of the imminent impoundment of Lake Oahe. While this bridge has maintained integrity of setting, it has been sufficiently dismantled to destroy the integrity of its design. The Pratt truss design is quite common (Torma and Ruple 1982:2-22) and not architecturally unique. Therefore, this site is not believed to be eligible for nomination to the National Register of Historic Places.

39DW117:

This site consists of a historic component located on the top of a terrace and a prehistoric component eroding from the edge of the terrace (see Figure 54). The terrace is very narrow and situated between small drainage valleys. The surface of the terrace is densely covered with mixed prairie grasses allowing only 10 percent surface visibility. Wave action has truncated the northern edge of the terrace forming a two meter high cutbank. The prehistoric materials were found at the base of the cutbank and on the beach in front of it. Surface visibility in this area was 100 percent.

The prehistoric materials consists of bone, burned rock, an endscraper and flakes, most of which are manufactured from Knife River flint with lesser quantities of Tongue River silicified sediment. These material are located in an area measuring approximately 10 m in diameter. Although no materials were observed imbedded within the cutbank, the potential exists for additional buried cultural materials to be present and as a result test excavations are recommended to establish their presence or absence.

The historic component consists of a 7 X 7 m concrete foundation enclosing a brush-filled depression and another 4 X 7 m brush-filled depression with a metal fence post along one edge. A few pieces of clear and aqua glass were observed around the features and a few pieces of wood.

The chain of title search indicates that this land was a part of Allotment 2202 issued to Josie Le Beau as a trust patent on December 13, 1915. It was then recorded as a fee patent on February 13, 1918. The land was later transferred to E. E. and Effie Harrison who then conveyed it on September 16, 1950 to the Cheyenne River Sioux Tribe. The land became a part of the Lake Oahe take area in 1957.

Because of the potential for subsurface cultural materials, testing should be completed in order to assess the age and integrity of both the prehistoric and historic components of the site prior to making a determination of eligibility for nomination to the National Register of Historic Places.

39DW123:

This site consists of a relatively dense, prehistoric artifact scatter located on the west-facing slope of a ridge (see Figure 55). The ridge is situated between Le Beau Creek and the Moreau River valley. Most of the cultural materials occur within an eroded area which has exposed the

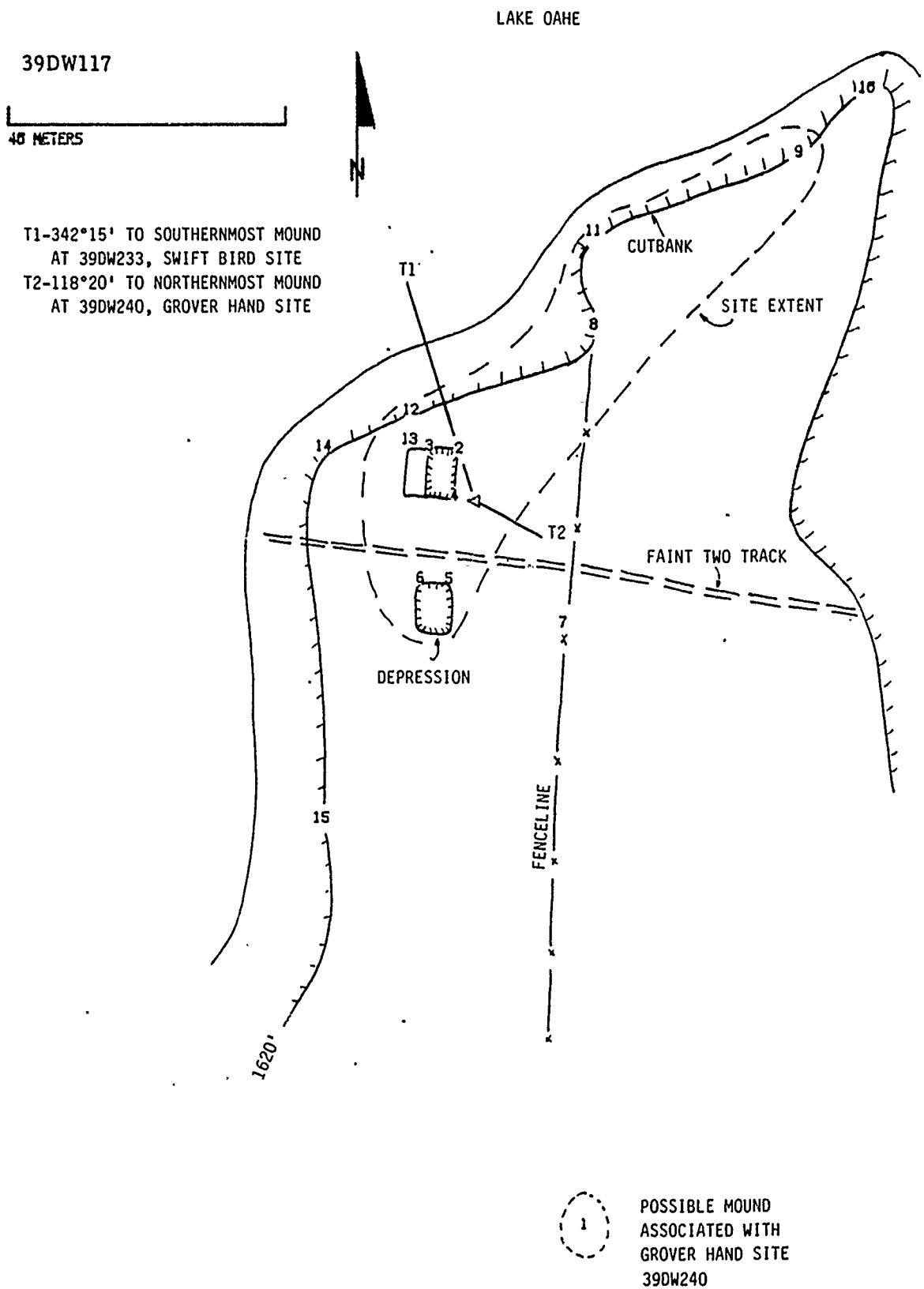


Figure 54. Map of 39DW117.

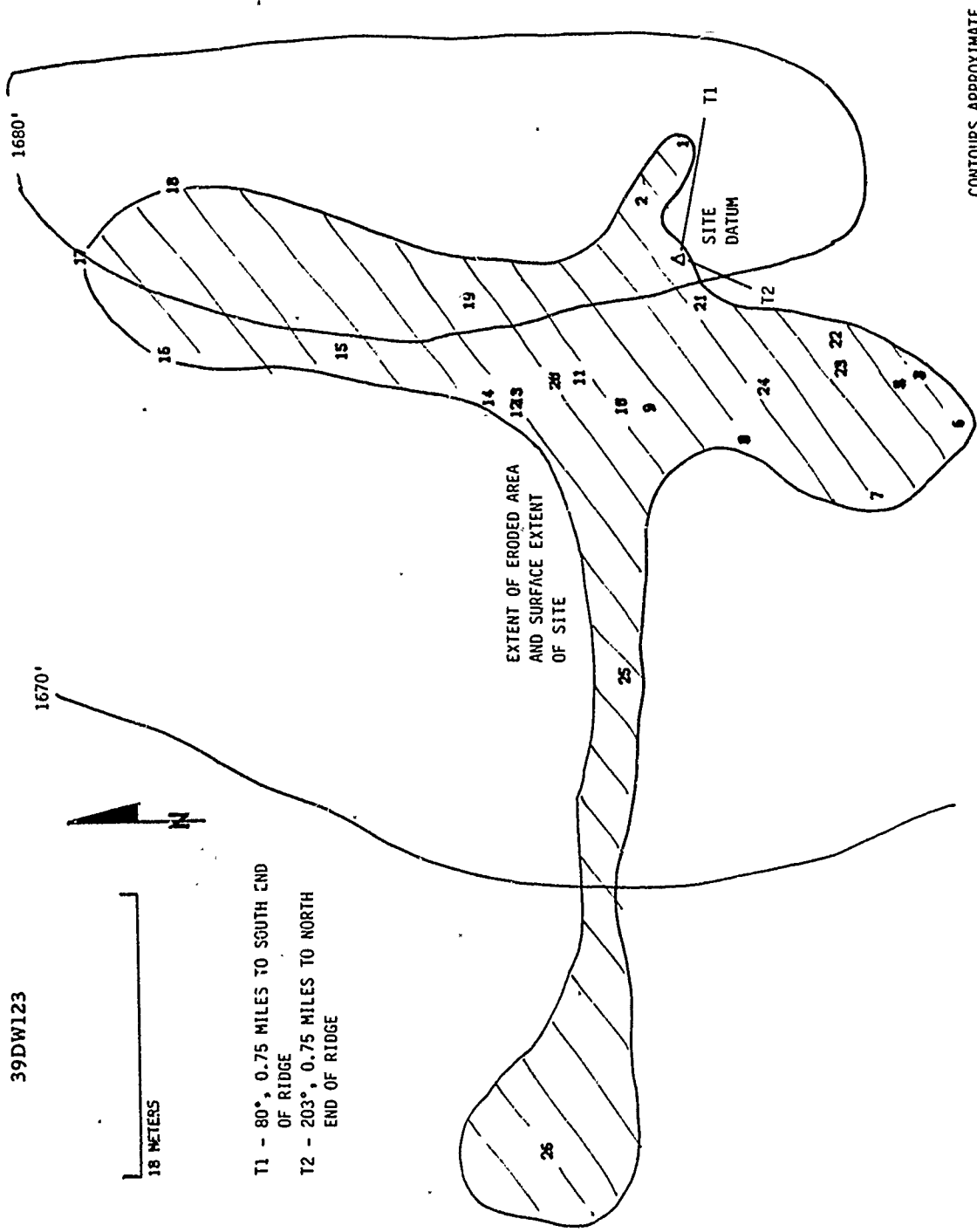


Figure 55. Map of 39DW123.

underlying weathered shale/clay bedrock. Vegetation within this area is sparse resulting in a surface visibility of approximately 80 percent. The vegetation surrounding the eroded area is basically the same but is more dense due to approximately 30 cm of soil deposition. Numerous cultural materials occur along the edge of the intact soil indicating a high probability for additional buried cultural deposits being present.

Observed cultural materials include burned rock, ceramics, chipped stone tools and lithic debitage. The lithic raw material types consist primarily of yellow/red Tongue River silicified sediment and miscellaneous chert, chalcedony and coarse quartzite. One unclassified rim sherd and a tool incised body sherd were collected (see Figure 56). The ceramics appear similar in paste, finish and temper to Coalescent wares. This conclusion is also supported by the lithic raw material types represented at the site. As noted previously (see Chapter Three) studies on lithic resource utilization (Ahler 1977b; Johnson 1984 and Sanders et al. 1987) agree that Coalescent Tradition sites are dominated by a wide variety of raw material types with only minor percentages of Knife River flint. Based on these indicators this site is thought to represent a possible Extended Coalescent "off-village" special activity area or campsite.

Test excavations are recommended in order to determine if significant buried cultural deposits are present within the areas with intact soil. Excavations are also necessary to gather additional information on chronology/cultural affiliation, site extent, integrity and content. Potential research questions concern the nature of the activities performed at an off-village locale and its overall relationship to neighboring earthlodge villages. White Eyes village (39DW241), now inundated, would have been the closest earthlodge village to this site.

Isolated Finds

Twenty-seven isolated finds were located during the 1986 cultural resource inventory. These items are listed in Table 9. Five chronologically diagnostic artifacts were assigned Smithsonian numbers by the South Dakota Archaeological Research Center in order to be accessioned and are more fully described below. None of the isolated finds are considered eligible for nomination to the National Register of Historic Places.

39DW118:

This artifact is a fragment of a probable Paleoindian period projectile point which was found on the beach next to Le Compte Creek. The Knife River flint point resembles Agate Basin varieties in cross-section, flake patterns and edge grinding (see e.g., Frison 1978:Figure 5.7d). One end of the point has been reworked while the other end is broken (see Figure 56b). While this item is considered an isolated find, its age is consistent with the age and development sequence of the Mt1 terrace next to the find spot, discussed more fully in the following chapter.

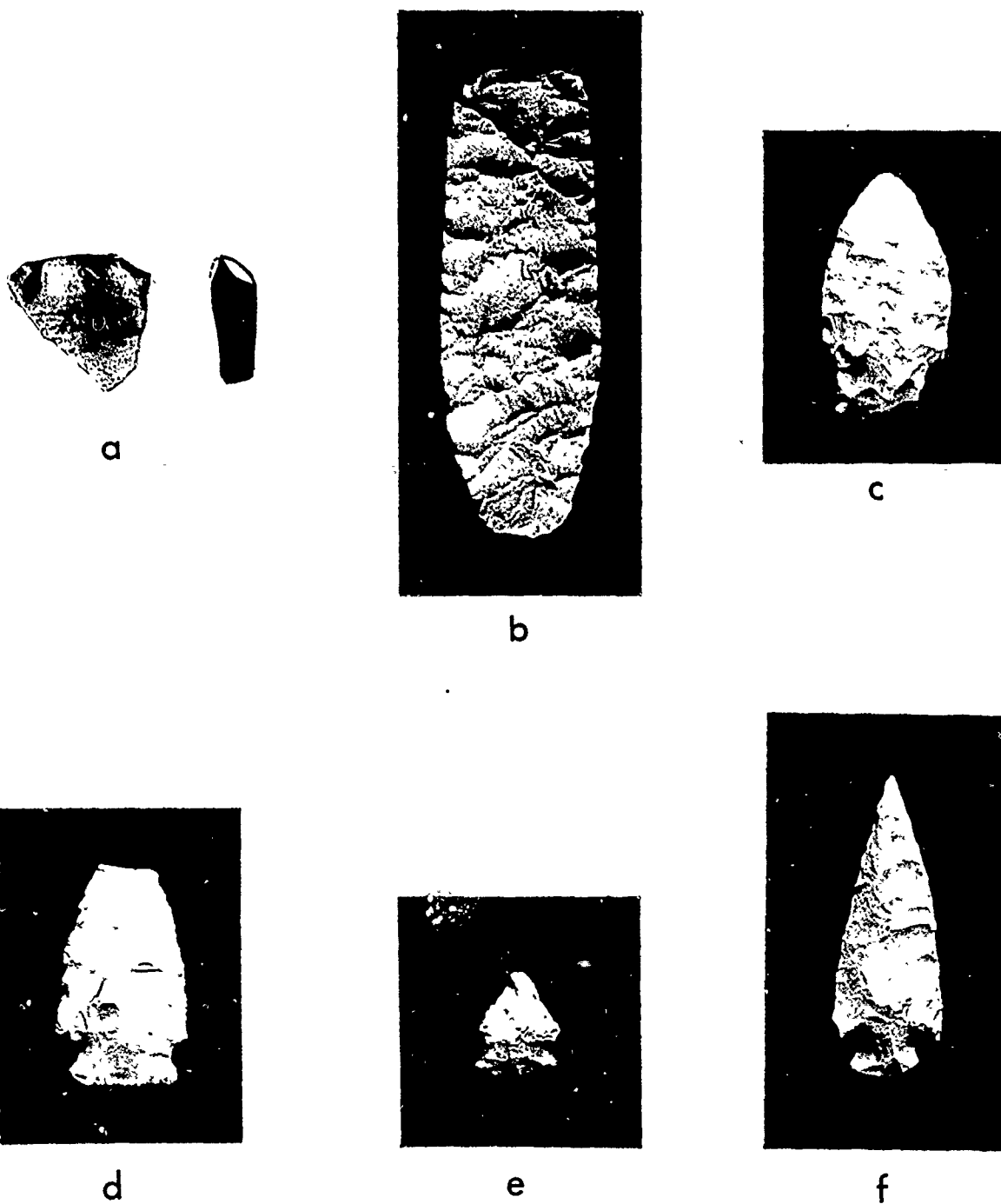


Figure 56. Rim sherd from 39DW123 and diagnostic isolated finds.
 All artifacts are actual size.

Table 9. List of Isolated Finds.

<u>Isolated Find No.</u>	<u>Temporal Affiliation</u>	<u>Description</u>	<u>Topographic Position</u>	<u>Substratum</u>	<u>Vegetative Community</u>
39DW118	Paleoindian period	Lanceolate projectile point	Beach next to terrace	Sand	Barren
39DW119	Middle Archaic period	Stemmed projectile point	Edge of terrace	Silt	Prairie grasses & cropland
39DW120	Late Archaic period	Corner-notched projectile point	Valley bottom	Clay	Weeds and prairie grasses
39DW121	Late Prehistoric period	Side-notched projectile point	Valley slope	Clay	Mixed grasses
39DW122	Late Archaic period	Corner-notched projectile point	Valley slope	Clay	Mixed grasses
IF LT1186-6	Prehistoric	Knife River flint secondary flake	Ridge slope	Clay	Prairie grasses
IF LT1186-7	Prehistoric	Unifacially retouched quartzite cobble	Valley slope	Clay	Prairie grasses
IF LT1186-13	Prehistoric	Gray chert tertiary flake	Valley slope	Clay	Prairie grasses
IF LT1186-19	Prehistoric	Tongue River silicified sediment core	Side of hill	Clay	Prairie grasses
IF LT1186-20	Prehistoric	White chert biface fragment	Side of hill	Clay	Prairie grasses
IF LT1186-21	Prehistoric	Small chert core/tested pebble	Valley slope	Clay	Prairie grasses
IF LT1186-23	Prehistoric	Yellow Tongue River silicified sediment secondary flake	Ridge top	Clay	Prairie grasses

Table 9. Continued.

<u>Isolated Find No.</u>	<u>Temporal Affiliation</u>	<u>Description</u>	<u>Topographic Position</u>	<u>Substratum</u>	<u>Vegetative Community</u>
IF LT1186-27	Prehistoric	Gray Tongue River silicified sediment secondary flake	Ridge top	Clay	Prairie grasses
IF LT1186-38	Historic	Metal windmill	Valley bottom	Clay	Weeds & prairie grasses
IF LT1186-39	Historic	1920s-1930s car body	Valley slope	Clay	Prairie grasses
IF LT1186-40	Historic	Wooden wagon tongue	Valley slope	Clay	Prairie grasses
IF LT1186-101	Prehistoric	Petrified wood primary flake	Ridge slope	Clay	Scattered scrub oak and prairie grasses
IF LT1186-102	Prehistoric	Gray Tongue River silicified sediment core	Ridge slope	Clay	Scattered scrub oak and prairie grasses
IF LT1186-104	Prehistoric	Petrified wood primary flake	Crest of ridge	Gravels	Sparse prairie grasses
IF LT1186-107	Prehistoric	Chert secondary flake	Valley slope	Clay	Sparse prairie grasses
IF LT1186-109	Prehistoric	Clear quartz utilized flake	Valley slope	Clay	Sparse prairie grasses
IF LT1186-111	Prehistoric	Gold chert tertiary flake	Ridge slope	Clay	Sparse prairie grasses
IF LT1186-113	Prehistoric	Petrified wood core	Valley bottom	Clay	Prairie grasses/ cottonwood forest

Table 9. Continued.

<u>Isolated Find No.</u>	<u>Temporal Affiliation</u>	<u>Description</u>	<u>Topographic Position</u>	<u>Substratum</u>	<u>Vegetative Community</u>
IF LT1186-116	Prehistoric	Clear chalcedony tertiary flake	Base of ridge	Clay	Sparse prairie grasses
IF LT1186-117	Prehistoric	Petrified wood primary flake	Valley slope	Clay	Sparse prairie grasses
IF LT1186-120	Prehistoric	Knife River flint tertiary flake	Valley slope	Clay	Sparse prairie grasses
IF LT1186-121	Prehistoric	Gray Tongue River silicified sediment tertiary flake	Valley slope	Clay	Sparse prairie grasses

39DW119:

This Knife River flint projectile point fragment was found on the surface of the same terrace described for 39DW118, although approximately 1.5 miles to the southeast. The point, illustrated in Figure 56c, was found next to a cultivated field and resembles the Middle Archaic period McKean projectile points (see e.g., Frison 1978:Figure 2.9H). Since the artifact was found on a surface also containing Plains Village materials, the item may have been displaced from a buried context by cultivation.

39DW120:

This projectile point is similar to the Late Archaic period Pelican Lake varieties (cf. Reeves 1983:Figure 12, no. 19). This isolated find is made from smooth, gray Tongue River silicified sediment and is missing its tip (see Figure 56d). It was found on the west side of Leconte Creek in an area of slightly vegetated, clayey soil along the present shoreline of Lake Oahe.

39DW121:

This isolated projectile point was found near Chicken Creek, an intermittent tributary of the Moreau River, in an area of clayey soil. The point is a small side-notched Late Prehistoric variety (see Figure 56e) made out of a clear chalcedony. The point is reminiscent of Avonlea types (cf. Reeves 1983:Figure 15, no. 4).

39DW122:

This projectile point is missing a portion of its base (see Figure 56f) making identification difficult. It is made from a fine-grained gray chert and resembles some of the narrower Pelican Lake varieties (see Reeves 1983:Figure 12, no. 17). However, it could also be comparable to some of the Lake Prehistoric period corner-notched points (cf. Reher and Frison 1980). This point was located on the north side of an unnamed intermittent tributary of the Moreau River in an area of clayey soil.

CHAPTER EIGHT GEOARCHEOLOGICAL INVESTIGATIONS

Michael L. McFaul and Paul H. Sanders

Introduction

During the 1986 field season a geoarcheological field survey was conducted in South Dakota along the right bank of Lake Oahe from U.S. Highway 12 southward to the Moreau River. This investigation attempted to assess the archeologic potential of this terrain by grouping similar landforms and soils according to their geomorphic history, soil-sediment characteristics and relative ages. Investigative methodology was designed to build and improve upon the techniques employed in a 1985 geoarcheologic survey of the right bank of Lake Oahe from U.S. Highway 12 northward to the North Dakota - South Dakota state line (Sanders et al. 1987). The results of the present investigation show that four of the seven landform-soil associations mapped in the Corps of Engineers' property north of U.S. Highway 12 (McFaul 1986; Sanders et al. 1987) occur in the study area south of the highway. Two new associations, the Schamber surface and the Moreau River floodplain, were delineated in the Moreau River drainage. An Oahe Formation-like soil sediment sequence was also found in limited loess accumulation localities. In addition, the use of soil surveys in this investigation allowed the delineation of probable Oahe Formation occurrences within the individual landform-soil associations.

Methodology

This survey employed a graduated four-step investigative procedure consisting of:

- 1) A literature review,
- 2) Hypothesis development,
- 3) Field hypothesis testing, and
- 4) A geoarcheologic assessment.

Literature Review

Introduction:

The intent of this review was to develop an understanding of the geomorphic and geologic history (South Dakota Geological Survey [SDGS] 1950 and 1952; Crandell 1953; Flint 1955; McFaul 1986) of the study area its relationship to the study area's geoarcheology. This understanding could then be employed to devise specific investigative strategies that mesh with other Missouri River geoarcheologic studies (and Irving 1959; Ahler et al. 1974; Moran et al. 1976; Clayton et al. 1976; Ahler et al. 1977; Coogan 1984; Artz 1985; McFaul 1985, 1986; Sanders et al. 1987; Bettis and Benn 1984; Bettis and Hoyer 1986; Gardener and Donahue 1985; Miller et al. 1985). To this end the glacial-sediment-soil models of Moran et al. (1976)

Clayton et al. (1976), Ruhe (1969, 1976), Clayton and Moran (1982), Bettis et al. (1986) McFaul (1986) and Sanders et al. (1987) combined with Pinsof's (1985) interpretation of South Dakota vertebrate localities and Kalvels and Boden's (1979) soil survey of Dewey County were particularly useful.

Geomorphology:

The physiography of the study area consists of alluvial gravel fill terraces and extensive exposures of Cretaceous clay-rich sediments littered with glacial erratics (Flint 1955; Hunt 1979). Erratics are found as far west as Goose Creek on the Moreau River (Flint 1955: Plate 1) and are easily identified on the divides between drainages. The erratics are thought to have been brought to the study area by a Pleistocene glaciation (Early Wisconsin or older: see "Iowan" glaciation in Flint 1955; Crandell 1958; or "Napoleon" in Moran et al. 1976; Clayton and Moran 1982) that predates the formation of the Missouri River drainage. An alluvial cut and fill gravel terrace sequence that post-dates this earlier glaciation and the formation of the Missouri River is found within the Missouri Trench.

Both the alluvial terraces and the Cretaceous bedrock are in part mantled with varying thicknesses of eolian loess. The eolian or wind blown loess sediments are the most recently deposited sediments in the study area (Clayton et al. 1976; McFaul 1986; Sanders et al. 1987). They are found on the more gently sloping topography of the upland drainage divides and the alluvial gravel terraces of the Missouri Trench. Loess deposition is believed to correlate with dryer climatic events in the Holocene (Clayton et al. 1976). The recent age and the gentleness of eolian sedimentation increases their archeological importance (Sanders et al. 1987).

Geology:

The oldest sediments in the study area are the Sully, Mobridge and Virgin Creek members of the Late Cretaceous Pierre Formation (SDGS 1950, 1952). The Mobridge member is the youngest and occupies the higher elevations on the landscape. It is underlain by the Virgin Creek member which is exposed in the extensive bluffs of the Missouri Trench and in the Moreau drainage. Isolated outcrops of the Sully member are present in the lower segments (SDGS 1950) of the Moreau (Sec. 12, T16N R30E; Sec. 21, T16N R31E) and Missouri River drainages (Three Legs Creek Sec. 10, T16N R31E). These clayey sea floor sediments are recognized by their blue gray to dark gray colors and shrink-swell properties (SDGS 1950, 1952). The Mobridge clays and Virgin Creek shales have been extensively modified by fluvial, glaciofluvial and degradational processes (McFaul 1986; Sanders et al. 1987; Flint 1955; Crandell 1953; Warren 1952; Warren 1869:311) along with glacial processes (Hunt 1979; Moran et al. 1976; SDGS 1950, 1952) and late Wisconsin-Holocene climatically induced periods of hillslope instability, sedimentation, and pedogenesis (Clayton et al. 1976). These modification processes have created a Tertiary lacuna or break in the geologic record leaving only the Cretaceous and late Quaternary sediments remaining in the study area.

The Pleistocene sediments consist of glacial erratics from an older "Iowan" (Flint 1955; Crandell 1958) or "Napoleon" (Moran et al. 1976) Pleistocene glacial advance (Flint 1955) that litter the outcrops of the

Cretaceous Pierre Formation between the Moreau and Grand Rivers. Younger Late Pleistocene sediments are also present in the fluvial and glaciofluvial gravel accumulation terraces along the flanks of the Missouri (McFaul 1986) and Moreau River drainages.

Four glaciofluvial terraces have been identified in the Mobridge vicinity (McFaul 1986; Sanders et al. 1987). They are designated "Mt" for Missouri terrace and ordered by their ascending height above the Missouri River (after Coogan and Irving 1959). Three of these terraces (Mt4, Mt2, Mt1) are accumulation surfaces consisting of glaciofluvial gravels mantled with loess sediments. The remaining terrace (Mt3) is an erosional wave cut terrace similar in elevation to the Lake Arikaree surface in the Blue Blanket area (SDGS 1952).

Missouri Trench:

Todd (1889) and Flint (1949) thought the presence of the glaciofluvial terraces indicated that diversion of the pre-Missouri River eastwardly-trending drainages by Pleistocene glacial advances resulted in the creation of the Missouri River drainage. The time of this diversion is debated (Todd 1889, Warren 1952; Flint 1955; Crandell 1958; Coogan and Irving 1959; McFaul 1985). Earlier researchers have considered the diversion to coincide with the Illinoian glaciation (Warren 1952; Flint 1955; Crandell 1958) while later researchers have suggested it was a Wisconsin occurrence (Coogan and Irving 1959; Flint 1971; McFaul 1985, 1986).

Debate centers around fluvial and glaciofluvial processes. Crandell (1958:53; also see Warren 1952) believes the lithology of the gravels at the Stroup locality north of the Bad River (see Pinsof 1985:256-7) and the glaciofluvial terrace gravels within the Missouri trench on the Scotty Phillips Terrace north of Pierre, South Dakota (Crandell 1958) indicates the drainages were diverted during the Illinoian stade (glacial). The trench then deepened in the Sangamon interglacial and was filled with glacial sediments by the outwash from the Wisconsin advances (see Figure 57 and Table 10).

McFaul (1986; Sanders et al. 1987) suggests an early late Wisconsin age for the Missouri River in the Mobridge vicinity. This hypothesis is based on the nonweathered appearance of the gravels on the upper Missouri River terrace (Mt4; see Table 10), the immaturity of the soil developed on the Mt4 loess cap and the terrace's position vis-a-vis a high level "Iowan" (R. V. Ruhe, personal communication 1985) erosion surface. Support for this assessment is seen in the youthful steep slopes of the Missouri Trench and the easily erodible nature of the Pierre Formation (after Flint 1955).

Pinsof's (1985:255-257) faunal analysis of the Stroup locale and the Scotty Phillips Terrace (see Crandell 1958:Qto in Table 4) suggests that both localities are Rancholabrean in age (i.e., less than 500,000 years or mid-Late Pleistocene). The presence of Mammuthus (Parelephas) jacksoni (probably jeffersoni) at the Scotty Phillips Terrace implies a Wisconsin age for this surface. The diversion question is further complicated by the renewal of the composite stream discussion (Flint 1949). It implies the Missouri River is a composite or multiaged stream whose final form was not developed until relatively late in the Pleistocene (Arthur Bettis, personal communication 1986). As a result, while most researchers agree on the

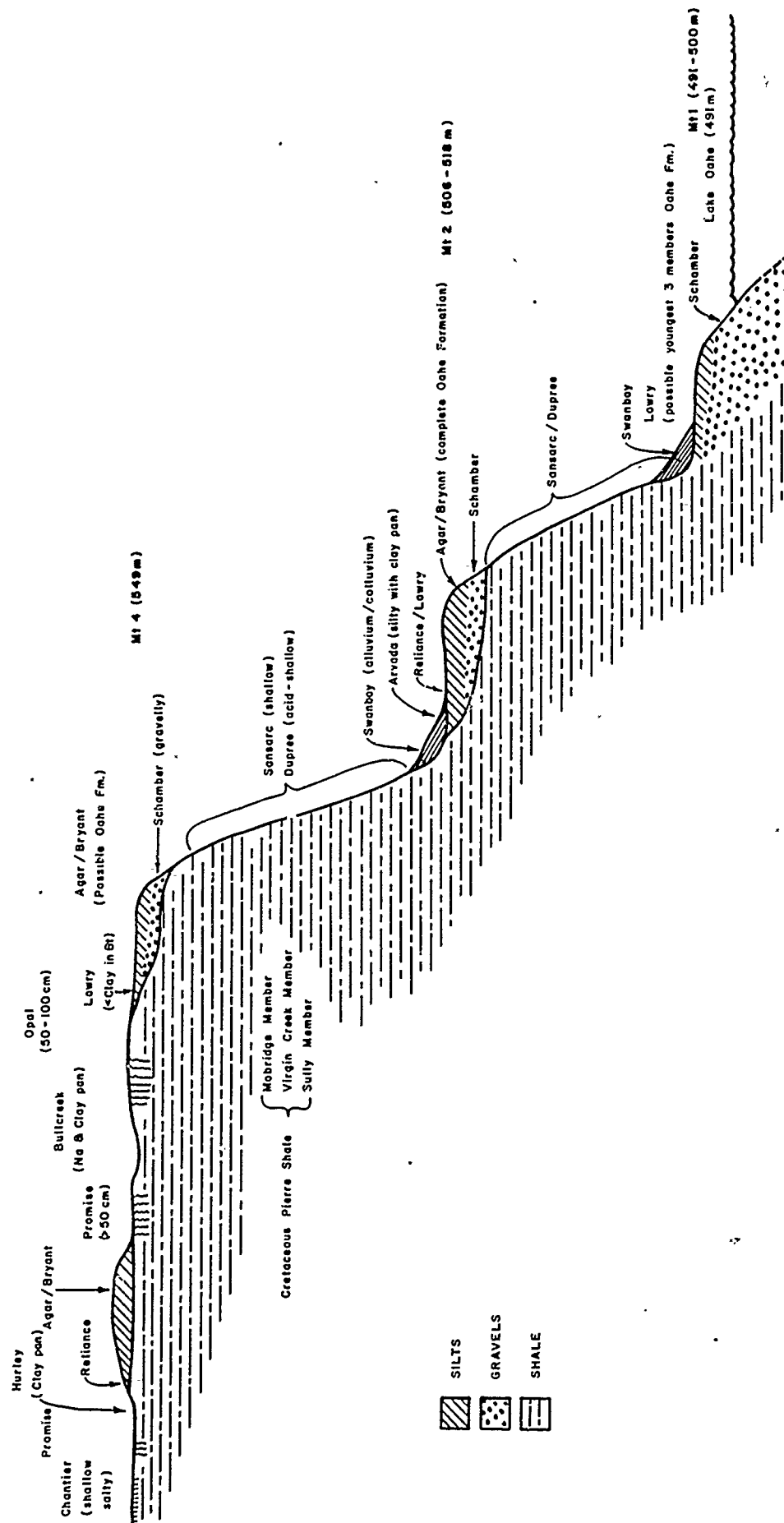


Figure 57. Conceptualized Missouri Trench soilscape Grand to Moreau rivers, South Dakota.

Table 10. Missouri terrace elevations and possible correlations with Missouri River terrace sequences.

McFaul (this report)			McFaul (1986)			McFaul (1985)		
*	**	***	*	**	***	*	**	***
Mt4	549	82	Mt4	549	79			
Mt3	(absent)		Mt3	518	46			
Mt2	518-506	51-39	Mt2	506	37	Mt2	30-39	
Mt1	491	24	Mt1	491	21	Mt1	6-12	
Coogan & Irving (1959)			Crandell (1958)			Artz (1985)		
*	***		*	**	***	*	**	***
			Qto	518	91	Mt4	533-573	100-139
			Qto	494-482	61-55	Mt3	472-500	39-66
Mt2	24-31		Qco	451-438	24-11	Mt2	436-440	8-20
Mt1	10-14					Mt1	436-440	2-7
Mt0	3-5					Mt0	436-440	2-4

- * terrace designation
- ** elevation (meters above sea level)
- *** terrace elevation (meters above the Missouri River in the respective localities)

PLEASE NOTE: In some cases the elevations above sea level had to be interpreted by the author. If they are in error the author apologizes and takes complete responsibility.

actual diversion of the Missouri River, the exact timing and associated geological processes have yet to be fully worked out.

Oahe Formation:

Clayton et al. (1976) have shown that terrace landforms, because of their gentle gradients, are excellent repositories for eolian sediments. Their main contribution is the identification of a late Wisconsin-Holocene sequence of alluvial and later eolian sediments in the Missouri River drainage near Riverdale, North Dakota. This sequence, termed the Oahe Formation, consists of four recognizable members: Mallard Island, Aggie Brown, Pick City, and Riverdale (Clayton et al. 1976:11).

The Mallard Island is a very pale brown late Wisconsin sandy glacial meltwater deposit dating to 11,000 years B.C. The Aggie Brown is a loess deposit that is divided into two submembers, a light brown 11,000 to 8000 years B.C. soil B horizon overlain by a gray-very dark gray soil A horizon dating 8000 to 6500 years B.C. This distinct buried paleosol, the Leonard Paleosol (Bickley 1972), is mantled by the light gray carbonate-rich loess of the Pick City member which dates 6500 to 3000 years B.C. The Riverdale member is the youngest member of the Oahe Formation. It contains three loess submembers which date 3000 years B.C. to present. The lower and upper submembers are grayish brown while the middle is a brownish gray. The lower Riverdale submember, the Thompson Paleosol, is a buried soil A horizon similar to the uppermost modern soil A horizon.

The four members of the Oahe Formation are "easily recognizable in the field" (Clayton et al. 1976:3) by their color. Their compositions and colors correlate with late Wisconsin and Holocene climatic fluctuations. The darker horizons represent more moist soil forming climatic periods when the hillslopes were stabilized by vegetation and rivers were downcutting (Clayton et al. 1976:8). The lighter colored members represent dryer climatic periods where the hillslopes were more sparsely vegetated and subject to erosion. Erosional processes increased the amounts of sediment available for eolian transport to the gentle slopes and increased alluviation in the valley bottoms (Clayton et al. 1976:8-9).

Modern Soil Classification:

The modern (surface) soils in the study area (Table 11) have been divided into 49 mapping units (Kalvels and Boden 1979; Heil and Kempton n.d.). These mapping units are delineated by parent materials, soil (pedogenic) properties, slopes and their relationship to other soils. The soil mapping units are named for the most commonly occurring soil phase (Soil Survey Staff 1951) found in the unit. It is important to note that within any given soil mapping unit other soils are commonly present and a knowledge of the mapping concept (Figure 57) is needed to correctly interpret a given soilscape.

Grouped by parent materials, 13 soils have clay-rich parent materials, 7 are formed in eolian sediments and 7 have formed in alluvial sediments (Table 12). The clay-rich soils (Opal-Promise-Sansarc association) are associated with the uplands and flanks of the Missouri Trench and Moreau drainages where the clays are not covered by alluvial or eolian sediments (Figure 57). The eolian soils are found on gentle uplands (Hurley, Arvada,

Table 11. Classification of soils in the study area*.

Agar	Fine-silty, mixed, mesic Typic Argiustolls
Arvada	Fine, montmorillonitic, mesic Ustollic Natrargids
Banks	Sandy, mixed, frigid Typic Ustifluvents
Bryant	Fine-silty, mixed Typic Haploborolls
Bullcreek	(Classification unavailable to author at present)
Chantier	Clayey, montmorillonitic (calcareous), mesic, shallow Ustic Torriorthents
Dupree	Clayey, montmorillonitic, mesic, shallow Paralithic Vertic Ustochrepts
Havrelon	Fine-loamy, mixed (calcareous), frigid Typic Ustifluvents
Hurley	Very-fine, montmorillonitic, mesic Leptic Natrustolls
Loher	Fine, montmorillonitic, frigid Typic Ustifluvents
Lowry	Coarse-silty, mixed, mesic Typic Haplustolls
Opal	Very-fine, montmorillonitic, mesic Vertic Haplustolls
Promise	Very-fine, montmorillonitic, mesic Vertic Haplustolls
Reliance	Fine, montmorillonitic, mesic Typic Argiustolls
Sansarc	Clayey, montmorillonitic (calcareous), mesic, shallow Typic Ustorthents
Schamber	Sandy-skeletal, mixed, mesic Ustic Torriorthents
Sutley	Coarse-silty, mixed Entic Haploborolls
Swanboy	Very-fine montmorillonitic, mesic Ustertic Camborthids
Trembles	Coarse-loamy, mixed (calcareous), frigid Typic Ustifluvents

*After Kalvels and Boden (1979) and Heil and Kempton (n.d.)

Table 12. Soils series in the study area grouped by parent material*.

<u>Cretaceous Clay</u>	<u>Eolian Silts and Sand</u>	<u>Alluvial</u>
Dewey County		
Dupree	Lowry (terraces)	Schamber (gravels)
Sansarc	Agar (terraces)	Swanboy (fan)
Opal	Hurley (upland w $\frac{1}{2}$ clay	Promise (fan)
Promise	pan)	Trembles (Moreau)
Chantier	Arvada (upland w $\frac{1}{2}$ clay	Havrelon (Moreau)
	pan)	Banks (Moreau)
	Reliance (thin on terraces)	Loher (Moreau)
Corson County		
Dupree	Bryant (terraces)	
Bullcreek	Sutley (terraces)	
Opal		
Promise		
Sansarc		

* After Kalvels and Boden (1979) and Heil and Kempton (n.d.)

Reliance) and terraces (Lowry, Agar, Bryant, Sutley). The alluvial soils include those found on terrace gravels (Schamber), in fan sediments on bottom lands, terraces and along creeks/drainageways (Swanboy, Promise) and on the loamy and sandy modern soils of the Moreau River floodplain (Havrelon, Trembles, Banks, Loher).

Hypothesis Development:

The literature review disclosed a physiography dominated by exposures of Cretaceous Pierre Shales, Pleistocene glaciofluvial gravels and a Late Pleistocene-Holocene sand, loess and soil sequence. Similar landforms were delineated immediately north of the study area (McFaul 1986; Sanders et al. 1987) and in part at the Travis 2 and Walth Bay archeological sites directly across the river in Walworth County (Ahler et al. 1977; Ahler et al. 1974). The review also implied the archeological potential of the study area is limited by the shrink-swell (pedoturbative) capacities of the clayey soils, the stability of the landforms, and the presence or absence of eolian loess capable of separating and preserving cultural materials in situ.

The intent of the hypothesis development process was to formalize this understanding of the study area's "geo" (geoarcheologic, geomorphic, geologic) histories into field testable hypotheses. Hypothesis development focused primarily upon testing and improving the geoarcheologic interpretations produced for a similar study of the Missouri River's right bank immediately north of the study area (McFaul 1986; Sanders et al. 1987).

Two overall working hypotheses were produced to investigate this methodology:

1. If the study area can be assumed to have a similar "geo" history to that of the terrains found immediately to its north (McFaul 1986; Sanders et al. 1987) then corresponding landform associations or geomorphic mapping units should be present within the study area.
2. It follows that if the terrains have corresponding mapping units then an understanding of soil classification (Kalvels and Boden 1979) can further define the extent of the geoarcheologically valuable locales within the individual mapping units.

Consideration was also given to regional geomorphic-geoarcheologic problems:

1. Creation of the landforms within the Missouri River Trench (Todd 1889; Warren 1952; Flint 1955; Crandell 1958; McFaul 1985, 1986; Sanders et al. 1987) to help define those terrains with Late Pleistocene-Holocene sediments.
2. Correlation of Missouri River terrace chronologies (Coogan and Irving 1959; Crandell 1958; Coogan 1984; Artz 1985; McFaul 1985, 1986) to further refine man-land assessments.

3. Identification and refinement of the Oahe Formation chronology (Clayton et al. 1976) to more accurately assess the age of this Late Pleistocene-Holocene sequence and the cultural materials associated with it.

Field Hypothesis Testing

Introduction:

Field testing attempted to answer the questions proposed in the working hypotheses by conducting a modified (Sanders et al. 1987) soil-resource inventory (Soil Survey Staff 1951) and a terrain analysis (Way 1973). Delineation of the mapping units was compiled from geologic maps (SDGS 1950, 1952), geomorphic models (Crandell 1953; Flint 1955; Clayton et al. 1976; McFaul 1986; Sanders et al. 1987) and soil surveys (Kalvels and Boden 1979; Heil and Kempton n.d.). Ground truth validation was provided by vehicular, pedestrian, and boat observations (Soil Survey Staff 1951, 1975), terrain analysis (Way 1973; Cain and Beatty 1968) and geomorphic/pedogenic interpretations analysis (Birkeland 1984). Representative soil-sediment profiles were described where appropriate.

Observations:

Four of the seven landform associations delineated north of the Grand River (McFaul 1986; Sanders et al. 1987) are present within the boundaries of the Corps of Engineers' property south of the Grand River. The study area south of the Grand River lacks the sandstone capped erosional buttes, the deflated "Iowan" erosion surface and the erosional wave cut Mt3 surface. Three glaciofluvial accumulation terraces that are elevationally equivalent to the Mt4, Mt2 and Mt1 surfaces (McFaul 1986; Sanders et al. 1987:Table 3) are present within the Missouri Trench and the lower reaches of the Moreau River (see Appendix A). The steep dissected bluff terrain of the Missouri Breaks is also present. Due to its limited extent within the study area's boundaries and the similarity of its clay-rich soils, segments of the upland divide between the Grand and Moreau Rivers are included in the Missouri Breaks landform association. A new association is added to those found north of the Grand River (McFaul 1986; Sanders et al. 1987). It includes the floodplain of the Moreau River and comprises the floodplain steps (Howard 1959), bars and channelled lands developed in the alluvium.

Areally the Missouri Breaks is the largest of the five landform associations delineated in the study area. It descends from approximately 573m (1880 ft) on the drainage divides or 549m (1800 ft) on the flanks of the Mt4 surface to Lake Oahe at 490m (1608 ft). West of Mobridge the "Breaks" are very steep, however this steepness moderates downriver. The slopes of the breaks are developed upon the easily erodible Mobridge and Virgin Creek members of the Cretaceous Pierre Formation. The steeper slopes are unstable and potentially dangerous since they are subject to catastrophic slumping and sliding. Numerous headwardly eroding ephemeral and perennial streams (Smelser Creek, Deadman Creek, Thompson Creek, Le Compte Creek, Little Bear Creek, Three Legs Creek, Chicken Creek, Le Beau Creek, Beaver Creek, Hokshela Creek) cut into the Pierre Formation to form microridge and valley terrain.

The soils on the Missouri Breaks are included in the Opal-Sansarc-Promise and Sansarc-Opal associations (Kalvels and Boden 1979:7-9). These are clayey soils (Table 12) that develop upon differing topographic segments of the "Breaks" (Figure 57). The Promise soils form on the divides and the Opal soils on the gentler sloping hillsides. As the slopes steepen the Opal soils grade into the thinner Sansarc or Dupree soils. The Swanboy soil is developed on the alluvial clays and loess accumulated at the base of the "Breaks" in draws and on alluvial fans. This soil has a layer-cake appearance which may be a hillslope equivalent to the Oahe Formation (Sanders et al. 1987; McFaul 1986; Clayton et al. 1976). Isolated patches of eolian loess mantle segments of the gentle uplands above the "Breaks". Soils formed in the loess include the thin Arvada, Hurley and Reliance soils. Where the loess accumulations thicken, the Bryant and Agar soils appear. The Bryant soils (Corson County) and Agar soils (Dewey County: SW1/4, NW1/4, SW1/4, Sec. 25, T18N, R30E, Moreau NE Quadrangle) may contain an Oahe-like sequence.

At approximately 548m (1800 ft) the Mt4 surface rivals the divide segments of the Missouri Breaks as the highest association or mapping unit within the boundaries of the study area. This glaciofluvial (McFaul 1986) gravel accumulation surface is capped by varying thickness of eolian deposits. The lithology and sedimentary structures seen in the gravels on a Mt4 surface south of Moreau (W1/2, NW1/4, SW1/4, NW1/4, Sec. 24, T16N, R30E, Moreau Quadrangle) compares favorably with the lightly weathered glaciofluvial gravels at the Mt4 type locality (NW1/4, NW 1/4, NW1/4, Sec. 9, T19N, R29W Mobridge NW Quadrangle: see Sanders et al. 1987:Appendix B). One of two "large mammal" bones found weathering out of the gravels at the Moreau locality has been identified by John Pinsof. He identified it as Bison sp. and suggests it belongs to a Late Pleistocene descendant of Bison latifrons (John Pinsof, personal communication 1987).

The Mt4 landward boundaries with the Cretaceous shales are difficult to discern. However, these boundaries can be interpreted from soil survey maps (Kalvels and Boden 1979; Heil and Kempton n.d.), geologic maps (SDGS 1950, 1952) and changes in relief. The extent of the terrace fill gravels is believed to approximate the borders of the Agar/Bryant soils (Figure 57) with the clay-rich Opal-Promise soils. Facing the Missouri River, the Mt4 commonly has relatively steep flanks in which the Pleistocene gravels (sandy-skeletal Schamber soils) appear above the Pierre Formation (clayey Sansarc soils).

The Mt2 surface at 518-506m (1700-1660 ft) is approximately 51-39m (167-129 ft) above the pre-Lake Oahe Missouri River floodplain (Figure 57). Isolated remnants of the Mt2 surface are found within the Missouri Trench and the Moreau River drainage. The Mt2 is a glaciofluvial gravel fill terrace that is mantled by varying thickness of eolian sediments. A modern soil and sediment sequence similar to that observed on the Mt4 terraces is also present. Agar-Bryant soils on the loess-mantled terrace surfaces are bounded by the Schamber soils on the gravels and Sansarc soils on the clays exposed on the terrace's flanks (Figure 57). An exposure of the two to six percent phase of the Bryant soil along Le Compte Creek (SW1/4, NW1/4, SW1/4, Sec. 25, T18N, R30E Moreau NE Quadrangle) compares favorably with the Oahe Formation soil-sediment sequence (Clayton et al. 1976).

Limited occurrences of ground moraine are found on shale outcrops which approximate the Mt2 elevation west of Walth Bay and the mouth of the Moreau River. The presence of the ground moraine within the Missouri River Trench indicates that a glacial advance, which post-dates the formation of the Missouri River, entered and crossed the pre-Mt2 Missouri River. The moraine's elevation and position within the trench also suggests the ice that deposited the moraine may have been responsible for damming the Missouri River and creating Lake Arikaree (see SDGS 1950). Wave action from Lake Arikaree also appears to have been responsible for creating the wave cut Mt3 terrace (McFaul 1986). This theory together with the western meander trend of the Missouri River upstream of the morainal topography would explain why the Mt3 is absent in the study area.

The Mt1 is elevationally the lowest of the three loess-mantled fill terraces delineated in the study area. It is found at elevations of approximately 500 to 491m (1640-1610 ft). The elevations vary depending upon the terrace's relationship to the meander trend of the Missouri River. A step-like descent from the Mt2 to the Mt1 surfaces is observable north of Le Compte Creek. In these isolated locales the two terraces are delineated by differences in their surface soils. The Agar and Bryant soils of the Mt2 have a fine-silty texture while the Lowry and Sutley soils of the Mt1 have a coarse-silty texture. The Agar soil also has an argillic (Bt) horizon. It is believed that the soil-sediment sequence on the Mt1 surface includes only the three most recent members of the Oahe Formation (McFaul 1986; Sanders et al. 1987). This implies the Mt1 soil-sediments date less than 8000 years B.C. (Clayton et al. 1976).

The Schamber surface consists of fluvial gravel deposits in the Moreau drainage (Figure 58). The soils associated with the gravels (Schamber-Sansarc association) at one location do contain a buried paleosol (fault scarp: NW1/4, Sec. 1, T16N, R30E Moreau NW Quadrangle) and buried faunal remains. The presence of the buried paleosol indicates a soil forming period took place during a hiatus in gravel deposition. It may also imply an early Oahe Formation correlative is present.

The remaining landform association is located in the westernmost portion of the study area and comprises the alluvial terrains and soils on the floodplain of the Moreau River (Figure 58). This gently concave plain consists of deposits of sandy and loamy alluvium. Soils found on the alluvium are considered weakly developed (youthful). Within this relatively horizontal landscape are three principal soil types; the Banks, Trembles, Havrelon and Loher (Table 11). The Banks soils are on the 'banks' of the stream channels and the Trembles and Havrelon are on the surrounding floodplain. The Trembles, Havrelon and Loher soils are identifiable by their textures. The Havrelon is "fine loamy" the Trembles is "coarse loamy" and Loher is "silty clay" (Kalvels and Boden 1979:104).

Summary:

Four of the seven landform associations mapped north of the Grand River are present south of the river. These include the Missouri Breaks, Mt4, Mt2 and the Mt1 surfaces. The absence of the Mt3 surface is explained by the westward meander trend of the modern Missouri River and the position of an ice dam west of Walth Bay. Two new landform associations are delineated within the Moreau River floodplain. Excluding the floodplain

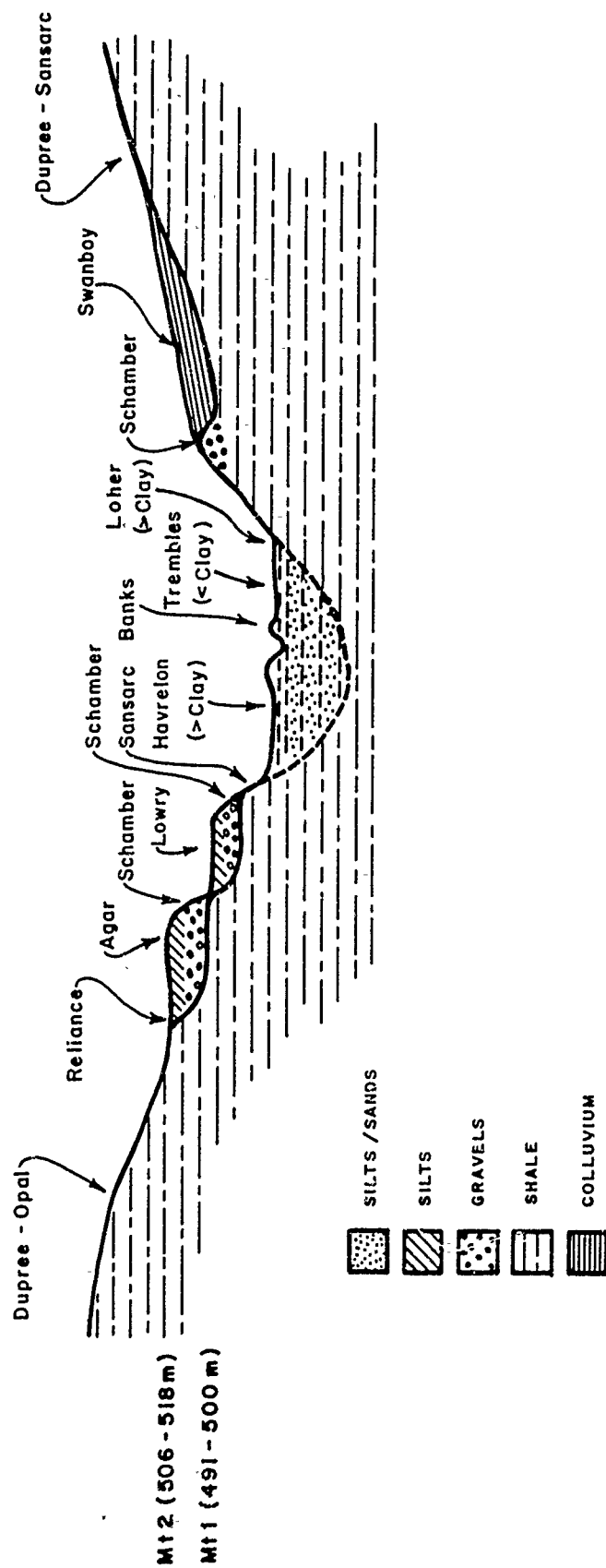


Figure 58. Conceptualized floodplain soilscape, Moreau River, South Dakota.

association, the Oahe Formation may be present within the other landform associations. The Mt2 has the highest probability of having a complete Oahe sequence. The Mt1 has only the last three members of the formation while modern soil formation may have masked the Oahe Formation's identifiable characteristics on the Mt4 and certain areas of the "Breaks" associations. Use of the modern soil classification in Dewey County (Kalvels and Boden 1979) has proved valuable in delineating the Oahe Formation within the individual landform associations. The Agar (Dewey County) and Bryant (Corson County) soils are associated with the Oahe Formation. An Oahe Formation correlative may be present in the soil (Schamber) developed in the glaciofluvial gravels and the accumulation soils (Swanboy) in the Missouri Breaks.

Geoarcheologic Assessment

This assessment is based upon an evaluation of the archeological potential of the soils, sediments, and landforms found within the boundaries of the Corps of Engineers' property along the right bank of Lake Oahe from the Grand River south to the Moreau River. Strategies employed in developing this assessment were designed to augment those employed in a previous assessment of the terrains north of the Grand River (McFaul 1986; Sanders et al. 1987). The emphasis in the previous survey was to delineate similar landform-soil associations and assess their geoarcheologic potential. This investigation incorporated the soil survey of Dewey County (Kalvels and Boden 1979) to help delineate areas of higher archeological potential within the individual landform-soil associations.

Missouri Breaks:

This landform association is developed upon the easily eroded bedrock Pierre Shale. The instability of this association's steeper slopes is well-documented (see Artz 1985) and offers very little potential for in situ preservation of cultural materials. However, aggregational sediments accumulated in the microvalleys (Swanboy and Promise soils) within the "Breaks" offer a slightly increased potential for the preservation of cultural materials.

A soil-sediment relationship between hillslope instability and climatic swings may exist (Clayton et al. 1976) in these aggregational locales. If present this sequence may prove helpful in providing a relative age dating chronology. Excavation at sites in these terrains should include an examination of this relationship. It may also be possible to develop of a soil-sediment chronology similar to the DeForest Formation in Iowa (Daniels et al. 1963). In developing this chronology careful consideration should be given to the high shrink-swell potentials (Kalvels and Boden 1979) of these geogenic (Buol et al. 1980) or cumulic soils. Alternate wetting and drying of soils with high shrink-swell potentials creates a self-mulching action (pedoturbation) within the soil capable of altering artifact proveniences. The fabric (Buol et al. 1980) of these soils must therefore be examined for evidence of pedoturbation before soil-sediment-climate hypotheses can be developed. All the other clayey soils found in this landform association (Dupree, Sansarc, Opal, Promise, and Chantier) have high shrink-swell potentials (Kalvels and Boden 1979) and their fabrics should also be examined for evidence of pedoturbation.

The uplands of this association contain areas with higher archeological potential. These areas occur on gentle slopes where eolian loess has accumulated (Arvada, Hurley, Reliance, Agar, and Bryant soils). The loess accumulations have a moderate to low shrink-swell capacity (Kalvels and Boden 1979) depending upon the amount and types of clays present. The archeological potential of the loess soils is also increased by the ability of continued "gentle" eolian deposition to separate cultural components. Clayton et al. (1976:13) suggest that where eolian sediments of the Oahe Formation are thin (see Figure 57 and Table 13: Arvada, Hurley and Reliance soils) its members are so compressed and altered by modern soil formation that they may be indistinguishable. Thus, only the thicker loess accumulations (Agar-Bryant and possibly segments of the Reliance soils) are considered to have the potential to contain an identifiable Oahe Formation soil-sediment sequence.

Finally, some geoarcheologic consideration should be given to the decreased fertility of the salt-rich soils (Chantier, Dupree, Sansarc: Figure 57) in this unit. These soils are comparatively infertile and where present, such as in the Promise area, the landscape is nearly barren of vegetation. It is beyond the scope of this project to delineate where these salty areas would have occurred through time, but their occurrence would have severely reduced the landscape's ability to support plant and animal resources. This problem should be considered when man-land-climate relationships in the Holocene are contemplated.

Mt4:

The archeological potential of the Mt4 landform association is higher than that of the Missouri Breaks association. This is primarily due to the surface's stability throughout the Late Pleistocene (Wisconsin) and Holocene. The (cumulic?) soils of this association are weakly developed (McFaul 1986; Sanders et al. 1987) and no apparent Oahe Formation sequence was observed in the study area. However, the loess soils mapped (Kalvels and Boden 1979, Heil and Kempton n.d.) in this association are classified like those of known Oahe Formation (Mt2) occurrences (McFaul 1986; Sanders et al. 1987). This implies a cumulic Oahe-like soil sequence may be present on this terrace and its presence may permit the relative age-dating of associated cultural materials. The boundaries of the Agar-Bryant soils may be helpful in delineating potential site extents. Loess accumulations do not have a high shrink-swell potential and are not subject to pedoturbation. The fill gravels found below the loess contain datable faunal remains helpful in determining the landform's age and paleoenvironmental characteristics.

Mt2:

The archeological potential of the Mt2 landform association is high due to the limited occurrence of an apparent Oahe Formation sequence. This sequence resembles the Oahe Formation visible at the Oahe type locality north of Riverdale, North Dakota (Clayton et al. 1976:4). This sequence can provide a relative age-dating chronology for in situ cultural material from the late Wisconsin to the present (Clayton et al. 1976:11) and a paleoclimatic record for developing man-environment hypotheses. The gravels below the eolian sediments also contain a faunal record valuable in deciphering paleoclimatic chronologies.

Table 13. Geoarcheological potential of the soils found in the study area.

<u>Soil</u>	<u>Important Characteristics</u>	<u>Archeological Potential</u>
Chantier	shallow-salty	Low (pedoturbative residuum)
Promise	bedrock less than 50 cm	Low (pedoturbative residuum)
Hurley	clay pan	Low (pedoturbative residuum)
Reliance	thin loess	Medium (thin aggradational silts)
Agar-Bryant	thick loess	High (Oahe Formation)
Bullcreek	clay pan-salty	Low (pedoturbative residuum)
Opal	bedrock 50-100 cm	Low (pedoturbative residuum)
Schamber	alluvial gravels	Low (Oahe-like Formation, gravel deposition altering site integrities)
Sansarc	shallow-steep slopes	Low (unstable slopes)
Lee	acidic-shallow-steep slopes	Low (unstable slopes)
Swant	slope wash	Moderate (aggradational chronology)
Arvada	loess with clay pan	Moderate (aggradational chronology)
Havrelon	alluvial clays	Low (youthful, pedoturbative clays)
Banks	alluvial	Low (youthful)
Trembles	alluvial sand & clay	Low (youthful)
Loher	alluvial silt & clay	Low (youthful)
Lowry	loess	High (Oahe to 10,000 yrs. B.P.)

Mt1:

The Mt1 is the youngest of the gravel-loess accumulation terraces. Data derived from excavations at Walth Bay (Ahler et al. 1974) and Travis 2 (Ahler et al. 1977) suggest this terrace dates to approximately 7000 years B.C. This is supported by the recovery of a 10,000 year old Agate Basin point (39DW118) near the flanks of a Mt1 surface. In limited eolian locales (Lowry-Sutley soils) the three youngest members of the Oahe Formation are thought present. The presence of the Oahe Formation on the Mt1 can provide a relative age-dating chronology and a climatic history for helping interpret the cultural record. The eolian members of the Oahe Formation also provide an ideal matrix for preserving cultural materials and site integrities.

Schamber:

This landform association is comprised of gravel deposits along the north side of the Moreau River valley. The gravels contain a buried paleosol at one location which would have a good potential for containing intact buried archeological materials if the paleosol is less than 11,000 years old. However, the elevation of the Chamber association tentatively suggests possible deposition sometime between Mt4 and Mt2 times. This would indicate a probable pre-11,000 year date for deposition and a low potential for containing cultural remains.

Floodplain:

This association includes the recent Holocene alluvial sediments of the modern Moreau River floodplain. The youthfulness of these sediments suggests they are of limited archeologic value. The higher floodplain steps (Howard 1959) and the lateral margins of the floodplain offer the highest potential. Finally, ongoing alluviation may have acted to bury cultural materials beneath the practical limits of archeological excavations and alter site integrity.

Summary:

The six landform-soil associations delineated in the study area vary in their geoarcheologic significance (Table 14), although each has the potential to contain cultural materials. Individually, they provide differing sets of soil-sediment contexts for preserving and dating cultural components. In comparison to the silt and gravel sediments the clayey soils/outcrops provide the poorest context for the in situ preservation of cultural materials. This is due to the pedoturbative characteristics of the clays and that the soils are developed upon degradational landforms (Sanders et al. 1987). The silt deposits are especially important since they provide a sediment context suitable for preserving site integrities. The loess soil-sediment sequence within the Oahe Formation also provides identifiable horizonation for relative age-dating and paleoclimatic chronologies.

What appears to be a complete Oahe sequence is present in the Mt2 association (Figure 57). It is associated with the Bryant silt loam, 2-6 percent slopes in Corson County (Heil and Kempton n.d.) and the Agar silt loam, 2-6 percent slopes (Kalvels and Boden 1979) in Dewey County. An

Table 14. Geoarcheological potential of the six landform associations in the study area.

	<u>Geomorphic History</u>	<u>Soil-Sediment</u>	<u>Relative Age</u>	<u>Total</u>
Missouri Breaks clays	1* (erosional)	1 (pedoturbation)	1 (n.a.)	3
silts	3 (depositional)	2 (Oahe Formation?)	2 (13,000 yrs. B.P. ?)	5 (higher if Oahe present)
Mt4	3 (depositional)	2 (Oahe Formation?)	3 (Wisconsin)	8 (9 if Oahe present)
Mt2	3 (depositional)	3 (Oahe Formation?)	3 (13,000 yrs. B.P.)	9 (complete Oahe)
Mt1	2.5 (recent deposition)	2.5 (partial Oahe)	2.5 (10,000 yrs. B.P.)	7.5 (Oahe through Leonard)
Alluvial	1.5 (active deposition)	1.5 (weak development)	1.5 (recent)	4.5 (modern floodplain)
Schanber	1.5 (active deposition)	2 (Oahe Formation?)	1 (Wisconsin)	4.5 (higher if mantled with loess)

* High = 3
Average = 2
Low = 1

incomplete Oahe Sequence dating from 8000 years B.C. is thought to be present on the Mt1 surface. It is also found in the Lowry silt loam in Dewey County (Kalvels and Boden 1979) and Sutley loam in Corson County (Heil and Kempton n.d.).

Loess soils also occur within the Mt4 and Missouri Breaks associations. Where they occur, the geoarcheologic potential of these associations increases, however where the loess accumulations are thin the "members and submembers [of the Oahe Formation] are compressed together (and so are separately indistinguishable within the A and B horizons of the [modern] surface soil)" (Clayton et al. 1976:13). The isolated occurrences of the Schamber gravelly sandy loam (Kalvels and Boden 1979) may also be archeologically important (see Appendix A). The presence of a buried soil within the gravels indicates that a soil forming event or hiatus in gravel deposition occurred. If this hiatus took place within the time span of man's occupation of the study area then these sediments are culturally valuable. The gravels also contain faunal remains which can help in refining this environmental interpretation.

Finally, the use of the Dewey County and Corson County soil surveys (Kalvels and Boden 1979; Heil and Kempton n.d.) has provided a valuable tool in refining recent geoarcheologic assessments (McFaul 1986; Sanders et al. 1987). Understanding the soil mapping concept allows geoarcheologists to delineate the archeological potential of areas within the individual landform associations.

As a result of this investigation future investigators are asked to place a high priority on refining the age of the Oahe Formation sequence. This will help clarify;

- 1) Paleoclimatic trends,
- 2) Depositional sequences, and
- 3) Man-land relationships in the Missouri River Trench.

Archeological Sites and Landform Associations

In order to further examine the geoarcheological potential of the project area, the 1986 inventory results were compiled by landform associations. Table 15 lists the sites and isolated finds and their respective landform. The Moreau River floodplain contained only five sites, all historic. This confirms the earlier geoarcheological assessment that prehistoric sites would be lacking due to the recent age of the floodplain deposits or the dynamic effects of deposition (i.e., rapid burial or destruction of archeological materials).

The Mt1 landform conforms to our expectations in that a large number of sites occur here. Eight of the ten sites are previously recorded and comprised of earthlodge villages or Sonota Complex sites. From this it would seem that the Mt1 surface was a favored location for Plains Woodland and Plains Village occupations. As shown in Table 16, the presence of two isolated finds indicates this landform also has the potential for containing older cultural material as well.

Table 15. Frequency of sites and isolated finds by landform association.

Moreau River Floodplain	Mt1	Mt2	Schamber	Breaks
39DW93	39C019	39C0144	39DW90	39C0143
39DW95	39C0145	39C0202	39DW97	39DW89
39DW112	39DW117	39DW1	39DW98	39DW91
39DW116	39DW118(IF)	39DW35	39DW101	39DW92
	39DW119(IF)	39DW104	39DW102	39DW94
	39DW230	39DW105	IF L/T1186-13	39DW96
	39DW233	39DW106	IF L/T1186-23	39DW99
	39DW234	39DW107		39DW100
	39DW236	39DW109		39DW103
	39DW240	39DW110		39DW108
	39DW242			39DW111
	39DW256			39DW113
	IF L/T1186-120			39DW114
	IF L/T1186-121			39DW115
				39DW120(IF)
				39DW122(IF)
				39DW123
4 Sites	10 Sites 4 Isolated Finds	10 Sites	5 Sites 2 Isolated Finds	15 Sites 21 Isolated Finds

Table 16. Frequency of temporal components by landform association.

<u>Chronological Period</u>	<u>Moreau River Floodplain</u>	<u>Mt1</u>	<u>Mt2</u>	<u>Schamber</u>	<u>Breaks</u>
Paleoindian		1 (IF)	1 (39DW35)		
Plains Archaic		1 (IF)	1		2 (IF)
Late Prehistoric				1	1 (IF)
Plains Woodland		3			
Plains Village		6	3	1	1 (39DW123)
Historic	5	6	4	1	6
Total Components	5	17	9	3	10

The Mt2 landform was also expected to have an excellent potential for containing archeological deposits. Ten sites were recorded on this landform but only three are previously recorded indicating a wider variety of prehistoric and historic utilization of this landform. The time depth of the prehistoric/historic utilization of the Mt2 is also similar to the Mt1 surface (see Table 16). Earlier components are indicated by a Pelican Lake projectile point found at 39DW1 and the possible late Paleoindian or Plains Archaic period burial at 39DW35.

The Schamber landform contains five new sites and two isolated finds. The potential for intact buried cultural deposits is exemplified by site 39DW101. Although it is apparent that this landform contains fewer cultural remains than the other landforms, this is probably due to the lower proportion of this landform compared to the others.

The "Breaks" landform contains the most sites and isolated finds. No previously recorded sites are located within this landform which is consistent with the findings from the geoarcheological investigation (Sanders et al. 1987) conducted immediately to the north. Prehistoric utilization of this landform is apparently quite ephemeral as noted by the large number of isolated finds. This may be due to the eroded nature of the soils with their lower potential for preserving cultural materials, or merely the fact that less vegetation occurs within these areas resulting in a subsequently lower plant and animal resource base and overall less attractive area for utilization or occupation. The overall geoarcheological potential (i.e., potential for intact buried cultural deposits) of this landform, based on the inventory results, appears to be quite limited.

CHAPTER NINE
DISTRIBUTION PATTERNS: THE USE OF GEOGRAPHIC
INFORMATION SYSTEMS TECHNIQUES AND COMPUTER AIDED DESIGN
PROGRAMS IN SITE LOCATIONAL ANALYSIS

Thomas K. Larson

Introduction and Background

This chapter contains the results of a patterning study of cultural resource properties located within the 1986 Lake Oahe project area. The ultimate goal of the study has been to produce a model of site distribution patterns which is both visually effective and as accurate as possible. In order to accomplish this goal, several of the techniques and variables proposed in the original Larson-Tibeser Associates technical proposal were modified somewhat and these changes are discussed in the sections which follow. All changes are based either on the results of the present inventory or past experience in modeling studies in the upper Lake Oahe area. None of the changes compromise the original intent of the study which was to produce results that would be of benefit to both archeological research and cultural resource management.

In an earlier attempt at predictive modeling in the Middle Missouri subarea Archer et al., through "the use of simple ecological characteristics" attempted to "select those physiographic variables best able to distinguish an archaeological from a nonarchaeological site" (Archer et al. 1982:30). As environmental variables, the study used a combination of descriptive characteristics relating to vegetative/landform type and distance/direction measurements to potential resources. A multiple linear regression technique was used to compare the location of 41 archeological sites and 20 "simulated" (i.e., nonarchaeological site) locations. It was found that the results were "capable of explaining nearly 70 percent of the variability associated with the location and distribution of archaeological sites" (Archer et al. 1982:30).

The results of the Archer et al. study are very encouraging in that they demonstrate that site distribution appears to be nonrandom and patterned, in terms of environmental/locational variables, in a fashion which should be predictable. The research also pointed out that multivariate analysis of the data produced reliable results even though, when considered singly, none of the variables were found to have much predictive ability (Archer et al. 1982).

The first attempt at predictive modeling in the Lake Oahe area was based on the results of the 1983 inventory of Corps of Engineers administered land along the left bank of the river, in Burleigh and Emmons counties, North Dakota (Larson 1986). The multivariate technique nearest neighbor discriminant analysis was used to compare known archeological site

locations to a series of randomly selected areas where cultural resources had not been encountered during inventory (i.e., "nonsite" locations). A set of nine environmental variables was used in the study. Unlike the Archer et al. study, which examined only Plains Village habitation areas, the 1983 Lake Oahe study developed three separate models for (a) the locations of Plains Village habitation sites containing the remains of semisubterranean lodges (hereafter referred to as earthlodge villages), (b) the locations of other prehistoric site types and (c) prehistoric isolated finds. The results indicated that the patterning of these resources was even more predictable than the sites studied by Archer et al. Accuracies of the models were found to be 82.92 percent for earthlodge villages, 88.32 percent for other prehistoric sites and 93.67 percent for prehistoric isolated finds (Larson 1986:122).

In a similar study along the right bank of Lake Oahe in North Dakota (Larson 1987) the multivariate statistical technique used in analysis was changed from nearest neighbor discriminant analysis to stepwise logistic regression. All prehistoric site types were combined into a single category and compared to a sample of randomly selected nonsite locations. The resultant model was found to be 74.62 percent accurate (Larson 1987:145).

Goals of the Lake Oahe Modeling Studies

The major drawback to all three of the above referenced studies is the extensive amount of manual labor that would be necessary to measure and encode variables for all possible locations within a large study area. In a ten thousand acre study, for instance, it might become necessary to take tens of thousands of individual measurements in order to extend the model's results to the entire study area. Besides the time and funding requirements for such an endeavor, the error factor for so many hand measurements would probably be quite high. While the models appear to be adequate predictors of site location, the techniques necessary for data gathering greatly lessens their utility for certain types of study.

All of the areas incorporated in the models which were developed for Lake Oahe have been subjected to intensive surface inventories. The intent, therefore, has not been to develop models indicating where, or where not, to survey. However, since bank erosion and other forms of land modification are continually exposing previously unrecorded cultural resources, it would be of value to have models which would predict where these resources are most likely to be found in the future. Additionally, from a research standpoint, it is desirable to develop means other than surface inventories to examine past site distribution and land use patterns. Because of these goals it becomes highly desirable to produce site probability maps for an entire area surveyed. Computer entry and manipulation of environmental/location data is the only efficient means of producing such an image. This was first attempted in the Lake Oahe area during the study of site patterning for the 1985 survey within portions of Corson County, South Dakota (Sanders et al. 1987) and was continued during the 1986 survey area analysis.

Geographic Information Systems

A geographic information systems (GIS) analysis is a method of data collection in which a data base is produced for an entire study area using an X-Y coordinate system which can be used to describe the location of any point within the sampling universe. The specific attributes under consideration are then plotted on this grid and used to calculate areas, terrain attributes and distance measurements related to a specific site or nonsite location.

Applied to other study areas, GIS analysis has been found to be an efficient and accurate means of storing and retrieving environmental data related to archeological site patterning (e.g., Kvamme 1983a; Hasentab 1983). The data entries may be used as variables themselves or they may be combined and mathematically manipulated to derive new variables. By entry of elevation data, stream locations, location of timber, and the distribution of geologic zones in the 1986 study area it is possible to calculate ten separate environmental/locational attributes for any point within the area.

Besides being far more efficient, the GIS approach to data entry and variable calculation also tends to reduce the number of points within a data gathering system at which error can occur.

...inter- and intra-user measurement error is eliminated; the computer offers the same results every time. Error in the computer derived measurements is solely a function of the resolution and accuracy of the data bases used and of the computational algorithms [Kvamme 1983a:31].

It should be pointed out that GIS analysis does not have any predictive capabilities; it simply develops and stores a data base of variables which can then be used by numerous univariate and multivariate statistical procedures. This independence from a particular statistical technique means that the same data set can be used by various researchers who may have different research interests or alternate means of analysis.

Variables Used in Analysis

The environmental variables used in site patterning analysis have already been briefly discussed in Chapter Five of this report. The following section defines the variables and explains how each was calculated. Many of the explanations are adapted from Sanders et al. (1987:247-250), which also contains justifications for their use. The ten variables are:

- Distance to the Missouri River
- Distance to Closest Permanent Tributary
- Distance to Closest Intermittent Tributary
- Distance to Timber
- Area of Tree Cover
- View Spread at One-Half Mile
- View Spread at One-Quarter Mile

Average Slope
Maximum Slope
Geologic Landform Diversity Index

Distance to the Missouri River, distance to the closest permanent tributary, and distance to the closest intermittent tributary were all calculated using a data set consisting of the digitized coordinates for all drainages within and near the study area. These readings were taken every 200 meters along a channel. The drainage was also coded as to whether it was the Missouri River (last pre-reservoir channel), a permanent tributary (solid blue line features on U.S.G.S. maps), or an intermittent tributary (dashed blue line features on U.S.G.S. maps). A FORTRAN V program was then used to compare the coordinates in the stream data base to the center points of the study units and find the closest distances for each stream type.

A similar procedure was used to determine the distance to timber variable. In this case, the data set used contained coordinates for the edges of timber and brush mapped on 1947 Corps of Engineers maps for the Missouri River. Area of timber was calculated from the same data base. The FORTRAN V program "TREDOC" was used to calculate the area (in hectares) of tree cover within a one mile radius of the center point of the study unit.

The program ASPECT was used to calculate view spread, maximum slope, and average slope for study units within the survey area. The program was written in FORTRAN V and implemented on the University of Wyoming's CDC Cyber 760. For the ASPECT program, Z (elevation) coordinates were recorded for the center point of each forty acre block within the survey area. It was also necessary to record additional elevations surrounding the survey area for a distance of three-quarters of a mile. Although one-half mile was the maximum radius considered, the additional one-quarter mile is necessary in order to avoid edge-effect distortions. Elevations were taken from U.S.G.S. topographic maps of the area.

View spread is an arc, measured in degrees, which extends downhill from the elevational contour line that passes through the given point. The concept is similar to Archer et al.'s (1982) "horizon panorama" measurements but it is calculated at fixed distances rather than distances to predetermined topographic barriers. The value of view spread for a given point is the arc which describes the widest unobstructed view extending out a specified distance. In the case of the 1986 Lake Oahe study, two different radii, one-half mile and one-quarter mile, were used to calculate two separate view spread variables.

The program ASPECT forms an $n \times m$ matrix (n = rows, m = columns) of Z values (elevations) where the matrix location (i,j) corresponds to the appropriate center point of a 40 acre block (defined as an x, y coordinate pair). Calculations for slope and view spread are based on this matrix of known points. In calculating the view spread for a given center point the program interpolates elevations at 100 meter intervals along a radius extending out from the center point for total distances of one-quarter and one-half mile. Elevations are interpolated for points along radii beginning with the radius at 0 degrees azimuth and continuing at 10 degree

intervals, ending with the radius at 350 degrees azimuth. Matrix location (i-1,j) is 'north' of, or 0 degrees from matrix location (i,j). If an interpolated elevation for any point along a radius is greater than the elevation of the center point the view is said to be closed along that radius.

If all interpolated elevations along a radius are less than the center point elevation the view is said to be open along that radius. Ten degrees is added to the current open arc measurement if the previous radius was also open, or the current open arc measurement is set at ten degrees if the previous radius was closed. All open arcs within the circle are calculated in this manner and the largest of these is chosen as the value of view spread for the given point.

Z values for interpolated points are calculated using a weighted average of the Z values of the eight nearest known points according to the following formula:

$$ZI = \frac{\sum_{i=1}^8 w_i z_i}{\sum_{i=1}^8 w_i}$$

where ZI is the calculated Z value for the interpolated point, z_i is the Z value of the i th nearest known point, and w_i is the weight of the i th nearest point, $w = 1/d_i^2$. The value d is the Euclidean distance between the interpolated point and the i th nearest known point. Using this method, closer known points contribute more to the calculated Z value of the interpolated point, while known points further away contribute less.

Average slope is determined by the mean of the slopes (in percent grade) between each elevational data point and the eight adjacent points in the grid system. Maximum slope is the largest of these eight values. Percent grade is calculated as:

$$\left| \frac{ZC - ZN}{D} \times 100 \right|$$

where ZC and ZN are the elevations at the center point and the elevation at an adjacent point, respectively, and D is the distance between these points.

The geologic landform diversity index is based on the Shannon-Wiener Index (Pielou 1974) which uses the proportion of the occurrence of a given category within the community and measures the number of categories and their "evenness" in relation to one another. It was originally intended that soil types rather than landforms would be used in analysis. However, it was found that the soils information available for Corson and Dewey counties were not comparable.

The use of landforms in a diversity calculation is based on two premises. First, following Roper (1979:81) it is believed that "sites are placed not only on landforms, but in relation to landforms." Secondly,

landform composition affects soil development and both, in turn, ultimately influence plant growth and community patterning (cf., Hunt 1972). This relationship is especially important in regions such as the 1986 study area where cultivation and other recent human activities have masked or destroyed the past vegetative patterns and detailed surface soils maps are not yet available. In such a case it is possible that landform diversity can at least partially emulate past vegetative diversity and yield similar clues (e.g., Reher and Witter 1977) regarding human settlement of an area.

Higher diversity indices result when more categories (landforms) are present and as the number of occurrences for each category approaches uniformity. For this implementation the "community" is defined as all points (matrix locations) falling within a circle of one mile radius centered on the given data point (i.e., the center of the study unit). The index is calculated according to the following formula:

$$\text{Diversity Index} = 1 - \sum_{i=1}^5 P_i \log e(P_i)$$

where P_i is the proportion of the i th category within the community. The entire area inventoried, as well as the surrounding buffer areas, is represented by five landform types (see Chapter Eight), hence the summation over five categories. Diversity indices were calculated using the FORTRAN V "GEOZONE" program and a data set consisting of the coded values for geologic zones at the center points of the 40 acre grid system superimposed over the entire study area. All values within a one mile radius of the test point are used in the calculation. The result of this calculation is assigned as the landform diversity index for the given point.

Site Types

For purposes of the present analysis, most of the cultural resources encountered during the 1986 Lake Oahe inventory were designated as being one or more of the following site types: earthlodge villages; prehistoric artifact scatters; woodland mounds; or historic occupations. Prehistoric isolated finds were included within prehistoric artifact scatters. Several types of historic resources, including historic period isolated finds, were not used in the analysis because they were few in number and difficult to categorize.

Logistic Regression Analysis

The multivariate statistical technique Stepwise Logistic Regression (Engelman 1981) was performed on the ten environmental variables discussed above in order to evaluate their classificatory power. Logistic regression analysis differs from normal multiple regression analysis in that the dependent variable is normally a binary response (e.g., 1 or 0, success or failure, site or nonsite) and no assumption of normality of distribution is made. Calculation of probability of group membership for a given location is explained in the following quote by Kvamme (1983b:73):

Like discriminant analysis, logistic regression defines a linear decision boundary that optimally separates the groups when group variance structures are assumed to be equal.

The logistically derived posterior probability that location i belongs to group 1 (the site group) is repeated here in matrix form...

$$P = \frac{e^{a+BX}}{1 + e^{a+BX}} = \frac{1}{1 + e^{-(a+BX)}}$$

where X is a vector containing measurements of the environmental predictor variables at location i , B is a vector of weights, and a is an intercept term...

As the name implies, the BMDP Stepwise Logistic Regression program uses a stepwise procedure to select the variables contributing to the model. The asymptotic covariance matrix method of selection (Engelman 1981) was used for the present analysis.

In the analysis performed, the four site types under study (earthlodge villages, prehistoric artifact scatters, woodland mounds, historic occupations) were each compared to 120 randomly selected nonsite locations within the study area. A final run of Stepwise Logistic Regression compared all prehistoric site types (combined into a single dependent variable) to the randomly selected nonsite locations. Table 17 presents the logistic coefficients and overall classification accuracy after the stepwise selection of the variables used in each of the five models.

While the overall accuracy for the prehistoric artifact scatters model (69.26 percent) and the prehistoric sites model (71.60 percent) are relatively high, most accuracy is derived from the correct prediction of nonsite locations rather than site locations (see Table 17). Such comparison of the results for binary classifiers is another advantage of logistic regression analysis. In multiple regression analysis, for instance, it is necessary to plot residuals in order to determine which, if any, category is more often being predicted correctly (e.g., Archer et al. 1982).

Interpreting and Utilizing Results

There are several ways of utilizing the results obtained from the logistic regression analysis. The predicted group memberships expressed in Table 17 are based on approximate equivalency; that is, in order for a location to be classified as a site, it must have at least a greater than 50 percent likelihood of being a site location and less than a 50 percent likelihood of being a nonsite location. "Cutpoints" other than 50 percent could be used to more correctly predict either site locations or nonsite locations.

It is important to recognize that virtually any level of "accuracy" in predicting sites can be achieved. This is

Table 17. Logistic coefficients and overall classification accuracy of the five models developed. Predicted group memberships are based on a .508 probability cutpoint for "site present." "0" = nonsite locations; "1" = site locations. Intercept (a) figures in this table have not been corrected to remove the influence of group sample size.

Earthlodge Villages

TERM	COEFFICIENT (B)	PREDICTED		ACTUAL
		0	1	
Distance to the Missouri River	-.288E-02	0 117	3	120
Distance to Closest Permanent Tributary	.283E-03	(97.50%)	(2.50%)	
View Spread at One-Half Mile	.107E-01			
View Spread at One-Quarter Mile	.312E-01	1 4	16	20
Maximum Slope	-1.79	(20.00%)	(80.00%)	
Area of Tree Cover	.326E-01			
Geologic Landform Diversity Index	7.77	OVERALL ACCURACY = 88.75%		
Intercept (a)	-5.94			

Prehistoric Artifact Scatters

TERM	COEFFICIENT (B)	PREDICTED		ACTUAL
		0	1	
Distance to Closest Intermittent Tributary	-.178E-02	0 117	3	120
Distance to Timber	-.112E-02	(97.50%)	(2.50%)	
View Spread at One-Half Mile	.942E-02			
Maximum Slope	-.240	1 23	16	39
		(100.00%)	(.00%)	
Intercept (a)	.180	OVERALL ACCURACY = 69.26%		

Woodland Mounds

TERM	COEFFICIENT (B)	PREDICTED		ACTUAL
		0	1	
Distance to the Missouri River	-.141E-02	0 119	1	120
Distance to Closest Permanent Tributary	.356E-03	(99.55%)	(.45%)	
Distance to Closest Intermittent Tributary	-.383E-02			
Distance to Timber	-.266E-02	1 8	0	8
Average Slope	1.89	(100%)	(.00%)	
Maximum Slope	-1.04	OVERALL ACCURACY = 49.77%		
Intercept (a)	-.779			

Historic Occupation Sites

TERM	COEFFICIENT (B)	PREDICTED		ACTUAL
		0	1	
Distance to the Missouri River	.143E-03	0 118	2	120
Distance to Closest Permanent Tributary	.363E-03	(98.33%)	(1.67%)	
Area of Tree Cover	.890E-02			
		1 12	3	15
Intercept (a)	-6.11	(80.00%)	(20.00%)	
		OVERALL ACCURACY = 59.16%		

Prehistoric Sites

TERM	COEFFICIENT (B)	PREDICTED		ACTUAL
		0	1	
Distance to Closest Permanent Tributary	.104E-03	0 107	13	120
Distance to Timber	-.120E-02	(89.17%)	(10.83%)	
View Spread at One-Half Mile	.924E-02			
Maximum Slope	-.233	1 28	33	61
		(45.90%)	(54.10%)	
Intercept (a)	-.288	OVERALL ACCURACY = 71.60%		

accomplished by accepting a "trade-off": exchanging increased accuracy for predicting sites in return for decreased accuracy in classifying nonsites, since it "costs" us little to call a nonsite a site compared to the reverse....What this maneuver does is to increase the size of the sub-space of the study region that is predicted to be "favorable" for sites such that more sites are included within it [Kvamme 1984].

The effect of selecting different cutpoints from the 1986 study can be seen by examining the data in Table 18 which are from the model for earthlodge villages. The cutpoints listed in the table are the probabilities for sites being present. As the cutpoint increases in value the percent of correctly predicted site locations (i.e., the "PRESENT" column) goes down while the percent of correctly predicted nonsite locations (i.e., "ABSENT") goes up. The same data are graphically illustrated in Figure 59.

The results for earthlodge sites in the 1986 study area are somewhat unusual in that there is a very low "trade-off" in accuracy of site prediction as the cutpoints are lowered (see Figure 59). A better example of the utility of lowered cutpoints is shown in Figure 60, which contains the results for all prehistoric sites combined into a single site type. As indicated in Table 17, the results at the fiftieth percentile cutpoint are of little value; the model correctly predicts 89 percent of the nonsite localities but only 54 percent of the site locations. By lowering the cutpoint for site locations to approximately .40, the model correctly predicts 72.13 percent of the site locations while still correctly predicting 76.67 percent of the nonsite locations (see Figure 60). In the case of the model for all prehistoric sites, the trade-off caused by lowering the cutpoint seems to be "cost-effective."

Bayes' Theorem may be used to test the effectiveness of the models compared to chance selection (Kvamme 1984). Since the model for earthlodge villages at the .5 cutpoint and the model for all prehistoric sites at the 0.4 cutpoint seem to have a certain degree of usefulness, these will be the examples utilized. The pure chance probability of a site occurring at a given location is based on the area covered by that site type as well as the total area surveyed. Twenty of the 516 locations within the study area contain segments of earthlodge villages; therefore the probability of correctly predicting a site location purely by chance is:

$$20/516 = .04$$

and the probability of correctly selecting a nonsite location by chance is $1 - .04$, or $.96$. Sixty-one of 516 locations contain a prehistoric site. The chance probabilities based on all prehistoric sites are therefore $.12$ for sites and $.88$ for nonsite locations.

Bayes' Theorem states that the actual probability of correctly predicting a site location based on the locational model is equal to:

$$\frac{P(M|S) P(S)}{P(M|S) P(S) + P(M|S^C) P(S^C)}$$

Table 18. Results from the logistic regression analysis of earthlodge villages illustrating how changing cutpoints influences results.

CUT- POINT	PERCENT CORRECT				CUT- POINT	PERCENT CORRECT		
	PRESENT	ABSENT	TOTAL			PRESENT	ABSENT	TOTAL
.008	100.00	89.17	90.71		.508	80.00	97.50	95.00
.025	100.00	89.17	90.71		.525	75.00	97.50	94.29
.042	100.00	89.17	90.71		.542	75.00	97.50	94.29
.058	100.00	91.67	92.86		.558	75.00	97.50	94.29
.075	100.00	91.67	92.86		.575	75.00	97.50	94.29
.092	100.00	91.67	92.86		.592	75.00	97.50	94.29
.108	100.00	91.67	92.86		.608	75.00	98.33	95.00
.125	100.00	91.67	92.86		.625	75.00	98.33	95.00
.142	100.00	91.67	92.86		.642	75.00	98.33	95.00
.158	100.00	91.67	92.86		.658	70.00	98.33	94.29
.175	100.00	93.33	94.29		.675	70.00	98.33	94.29
.192	100.00	93.33	94.29		.692	70.00	98.33	94.29
.208	100.00	93.33	94.29		.708	70.00	98.33	94.29
.225	100.00	93.33	94.29		.725	60.00	98.33	92.86
.242	100.00	93.33	94.29		.742	60.00	98.33	92.86
.258	95.00	93.33	93.57		.758	60.00	98.33	92.86
.275	95.00	93.33	93.57		.775	60.00	98.33	92.86
.292	95.00	93.33	93.57		.792	60.00	98.33	92.86
.308	95.00	93.33	93.57		.808	50.00	98.33	91.43
.325	95.00	95.00	95.00		.825	50.00	98.33	91.43
.342	95.00	95.00	95.00		.842	50.00	98.33	91.43
.358	95.00	95.00	95.00		.858	50.00	100.00	92.86
.375	90.00	95.83	95.00		.875	50.00	100.00	92.86
.392	90.00	96.67	95.71		.892	50.00	100.00	92.86
.408	90.00	97.50	96.43		.908	45.00	100.00	92.14
.425	90.00	97.50	96.43		.925	40.00	100.00	91.43
.442	90.00	97.50	96.43		.942	40.00	100.00	91.43
.458	90.00	97.50	96.43		.958	30.00	100.00	90.00
.475	85.00	97.50	95.71		.975	15.00	100.00	87.86
.492	85.00	97.50	95.71		.992	10.00	100.00	87.14

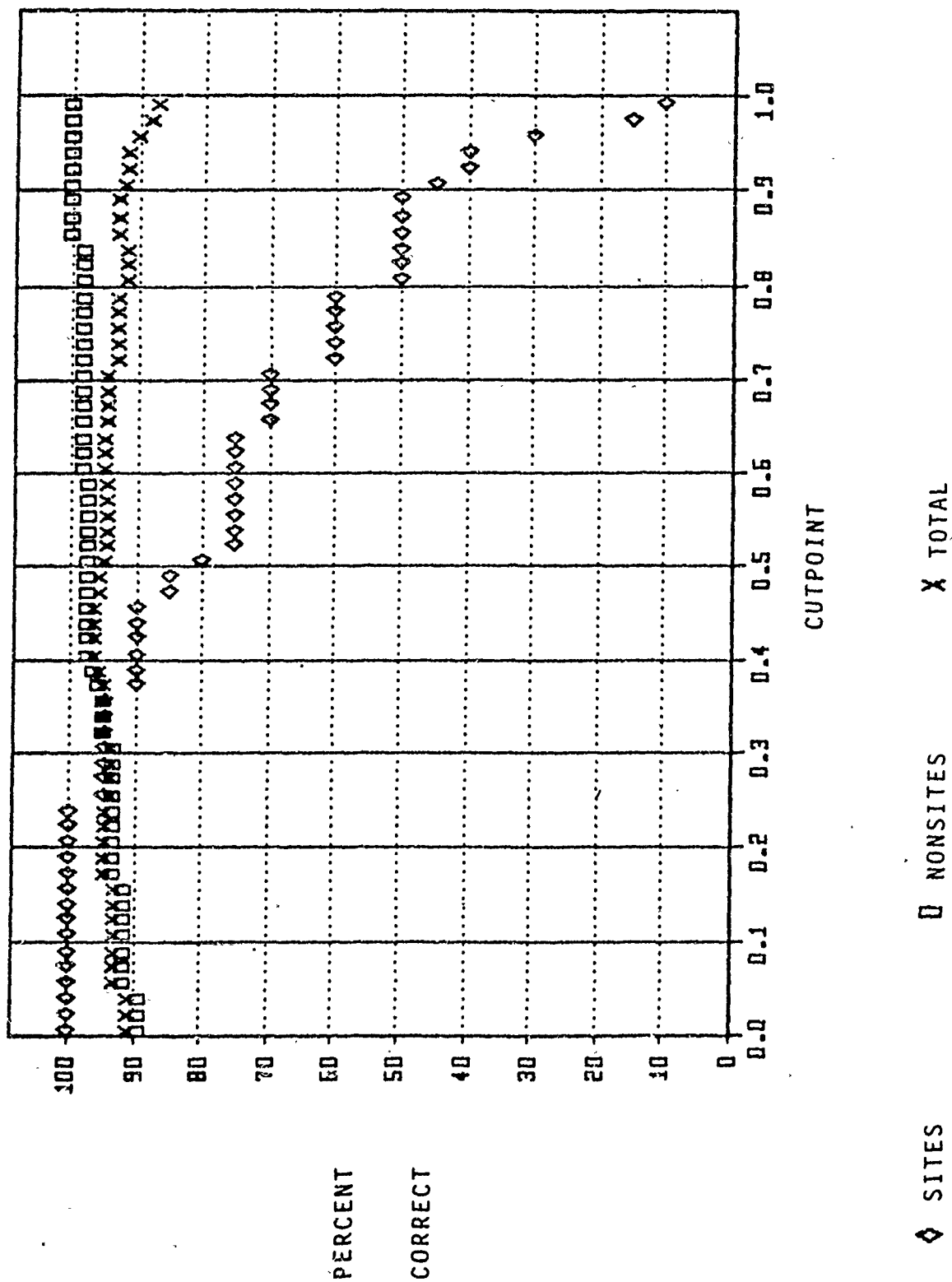


Figure 59. Probability graph for earthlodge villages model.

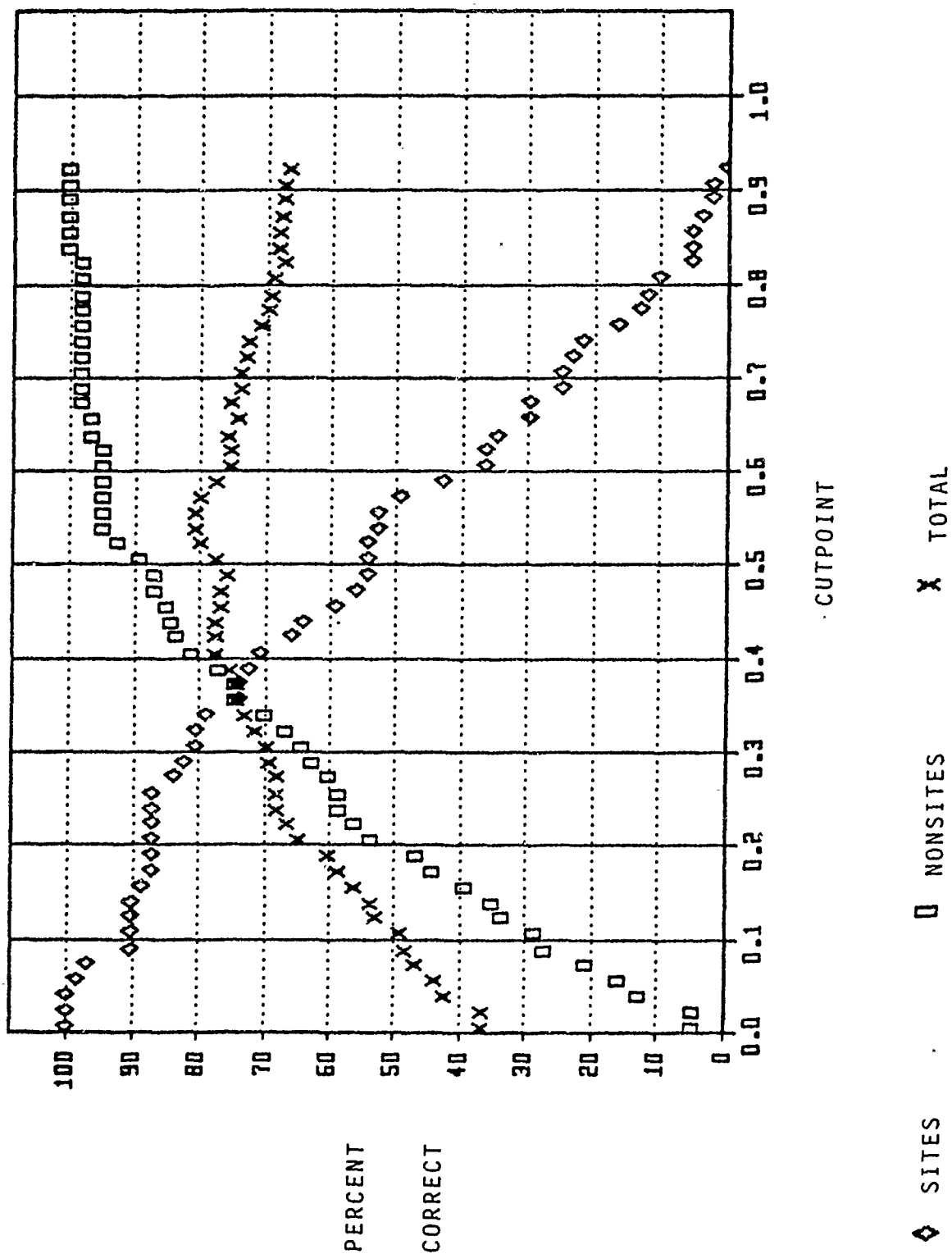


Figure 60. Probability graph for the model of all prehistoric sites.

Where $P(M|S)$ = the probability of the model correctly predicting a site; $P(S)$ = the chance probability of correctly predicting a site location; $P(M|S^c)$ = the probability of the model correctly predicting a nonsite; and $P(S^c)$ = the chance probability of correctly predicting a nonsite (Kvamme 1984). For the earthlodge sites model, using the .50 cutpoint, $P(M|S) = 0.80$; $P(S) = .04$; $P(M|S^c) = .025$; and $P(S^c) = .96$. Using these figures in the above equation results in a probability of .60. Dividing that probability by the chance probability of correct site location (.04) indicates that the model performs $.60/.04 = 15$ times better than chance for the prediction of site locations. Using the model for all prehistoric sites and a .40 cutpoint, the respective figures are $P(M|S) = .7213$; $P(S) = 0.12$; $P(M|S^c) = .2333$; and $P(S^c) = .88$. The model for all prehistoric site locations therefore performs 2.5 times better than pure chance for the prediction of site locations.

These results indicate that performances of the models for earthlodge villages and all prehistoric sites are both quite good, as long as the appropriate cutpoints are selected. Using the previously stated posterior probability equation:

$$\frac{1}{1 + e^{-(a+BX)}}$$

the models can be applied to the 516, 40 acre study units within the 1986 survey area. Individual locations can be examined or tables can then be generated which show the probabilities of a particular site type at all locations. While such tables are useful, it is often more informative to develop a graphic presentation of the data.

For large block area surveys, it has become a common practice to generate contour maps which illustrate probabilities of site location. While such techniques work quite well for block areas, the 1986 Lake Oahe survey area is a narrow corridor stretching along the edge of the lake and its inlets. Contour lines generated within such a narrow strip of land are generally both impractical and uninformative.

Another illustrative technique is to use particular print symbols as indicators of probability levels and generate a map which distributes these symbols over the area being studied. Commercial computer programs such as SYMAP or user programmed print routines (e.g., Hasentab 1983) can be used to create such maps. Such programs are rather limited in their scaling a computer's screen or interactively manipulate and explore the image.

Recently developed computer aided design (CAD) packages for microcomputers offer another means of designing and viewing site probability maps. CAD programs include drawing, scaling and shading options which allow the operator to quickly create multidimensional "layered" images. Such layering is very useful when dealing with various site types and discussing both their known and predicted locations. Figure 61 is a CAD drawing showing the distribution of the 516 sample units used in the present study. Over the top of this image, another "layer" of information can be added which shows the location all cultural resources. These data are illustrated in Figure 62. Rather than entering the data by hand, information for creating grid systems and shading them correctly can

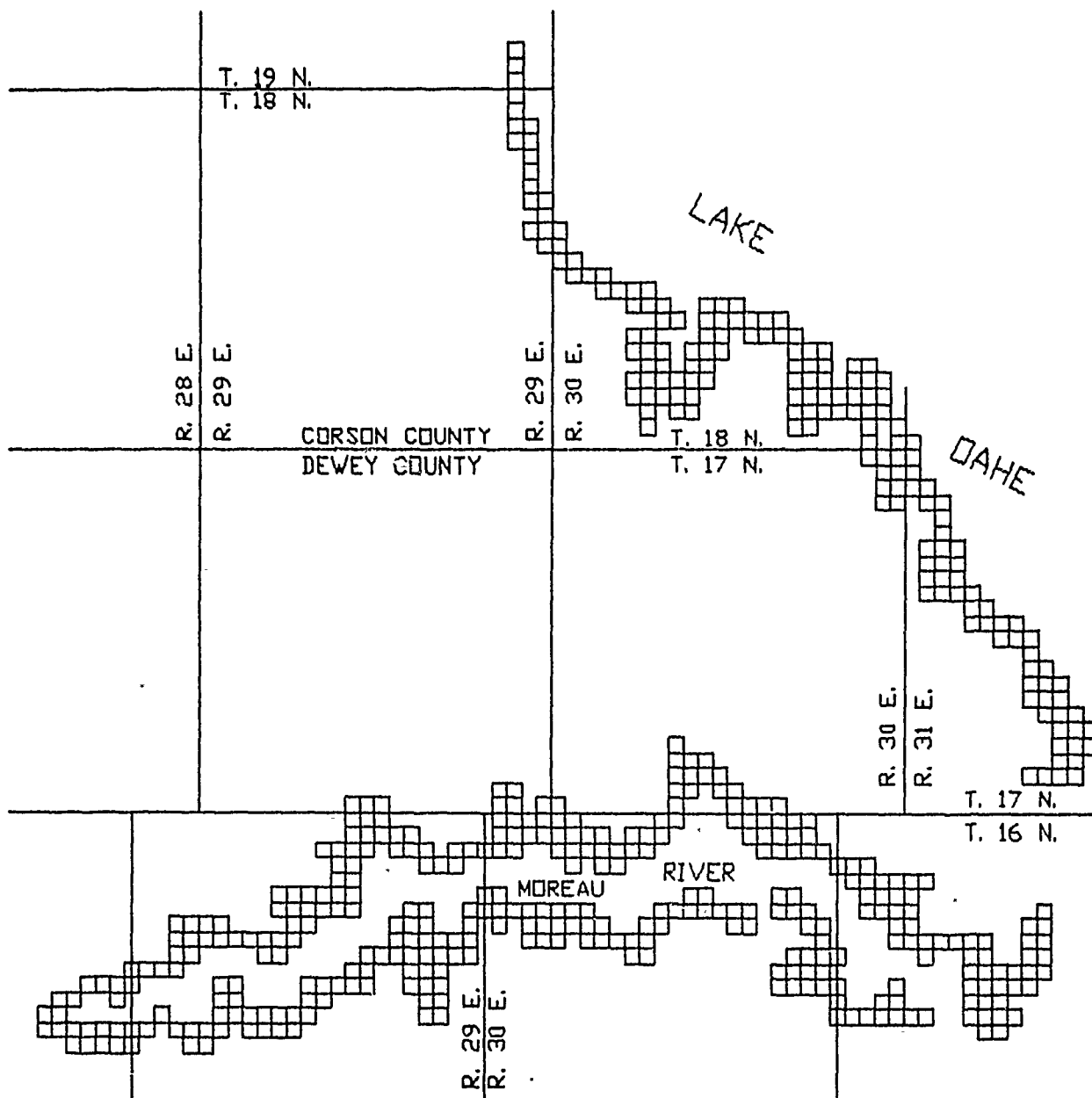


Figure 61. CAD drawing of the 516 sample locations.

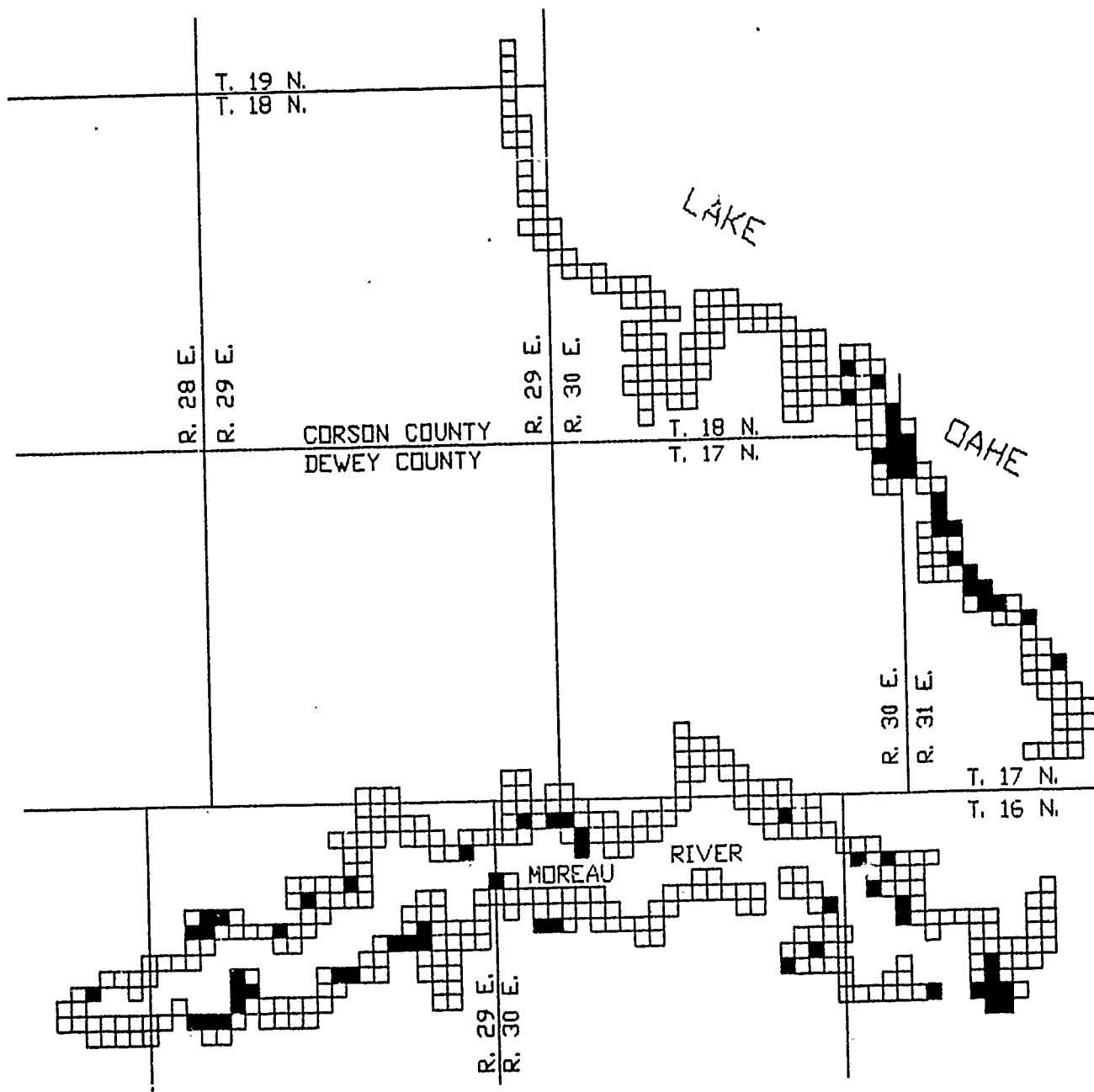


Figure 62. CAD drawing showing the distribution of cultural resources.

be introduced into a CAD drawing through use of "macros" (e.g., Schaefer and Brittain 1986) written to predefine specifications by a simple computer program. Except for supplemental labels, all the information needed to create Figures 61 and 62 was contained in the 1986 GIS data base discussed earlier in this chapter.

To further illustrate the utility of CAD packages in modeling site locations, the logistic regression coefficients for earthlodge villages were used to generate site probability figures for all 516 sample locations within the study area. Probabilities greater than or equal to .50 (the cutpoint discussed above for earthlodge villages) were converted into crosshatched squares of varying intensities and inserted as a layer over the base map for the 1986 study area. Those areas with a high likelihood of containing the remains of Plains Village occupations are illustrated in Figure 63. Because of its scale, it is not possible to see the different intensities of crosshatching in Figure 63. Figure 64 is an expansion of a small portion of the study showing several study grids with differing site probabilities. The complete map for the study area, at a scale one inch to the mile, is presented as Appendix B to this report.

Such maps have some obvious advantages over tabular information which could be presented on site patterning. Resource managers concerned with the protection of archeological sites can use a series of such maps to examine not only where sites are known, but also where they are likely to show up in the future. Such data can then be taken into account when considering land development or land exchanges. Future applications of the CAD technique could even superimpose existing and planned development areas on the same maps. Areas of high site probability can also be targeted for periodic monitoring to determine if actions such as bank erosion or vandalism are affecting a significant resource.

From the standpoint of archeological research, it is much easier to view potential settlement patterns on a map than it would be with tabular listings. Spatial distributions and associations, potential core areas of settlement, and those areas which may have been the most favorable for past settlement can all be examined. If desired, the CAD package can use the same GIS data base to display the locations of environmental variables used in analysis, such as streams, timber and landforms. Further details concerning these variables' relationships to sites and to one another can then be visually examined. Such "layers" of information can be turned on and off on the computer screen without the need to continually draft entirely new maps. Improved statistical techniques, a different modeling approach, or refinements in the data bases can all be easily accommodated without a drastic change in techniques.

The models developed for several of the site types, especially historic occupation areas, performed very poorly. It is believed that the key factors for the poor performance are an inadequate grasp of cultural characteristics which should be used in "typing" certain sites, lack of sufficient temporal stratification in the samples, and the development of study grid units which may be too large (40 acres) to accurately typify the environmental settings of site types which tend to cover relatively small areas. Insufficient sample size, especially in the case of mound locations, may also contribute to the problem.

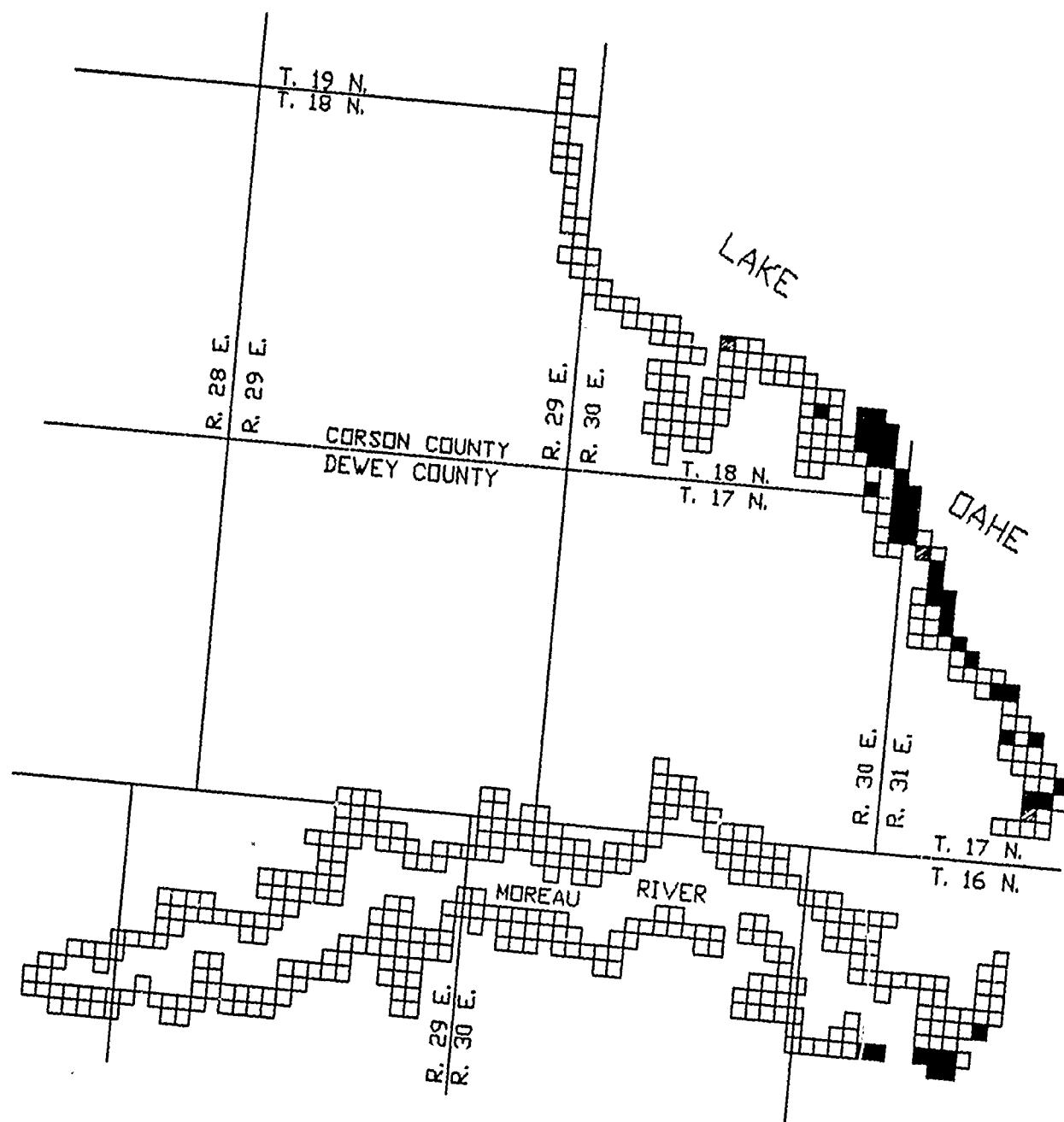


Figure 63. CAD drawing of predicted earthlodge village locations.

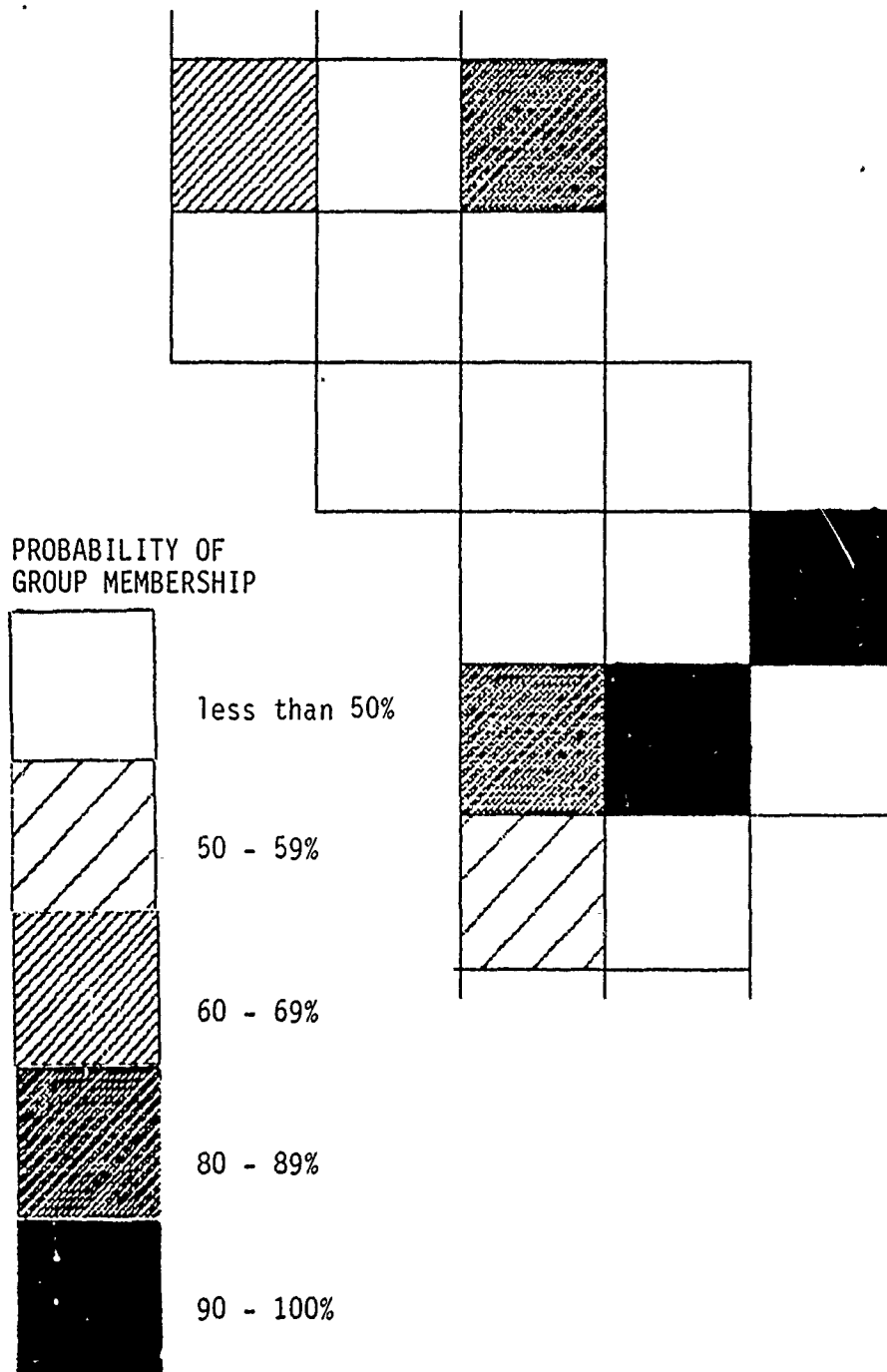


Figure 64. Portion of Figure 63 expanded to show differences in shading which indicate varying probabilities of a site being present.

CHAPTER TEN SUMMARY AND RECOMMENDATIONS

Paul H. Sanders

Introduction

The following provides a summary of the results of the 1986 cultural resource inventory of approximately 10,500 acres along portions of the right bank of Lake Oahe in Corson and Dewey counties, South Dakota. Summaries are provided on the overall inventory results, geoarcheological and site locational analyses and a discussion of impacts, recommendations and eligibility of the investigated sites for nomination to the National Register of Historic Places.

Inventory Results

This inventory resulted in the investigation of 44 archeological sites with components ranging from possible late Paleoindian through historic times. The observed archeological materials varied from single isolated finds to complex earthlodge villages and the original historic town of Promise. The inventory resulted in the reinvestigation of 11 previously recorded sites, 16 new prehistoric sites, 15 new historic sites, two new sites with both historic and prehistoric remains, and 27 isolated finds. Historic components were added to four previously recorded sites (39C019, 39DW240, 39DW242 and 39DW256).

The new sites consist of historic and prehistoric artifact scatters, historic depressions, foundations and cemeteries and a few rock cairns. Prehistoric diagnostic artifacts indicate an occupation of the project area from Paleoindian to the Extended variant of the Coalescent Tradition. No later Plains Village period sites were found which is consistent with Lehmer's (1971: Figures 82, 111) site distributions. The evidence for preceramic occupations within the project area comes from a few isolated finds and a burial recovered from 39DW35 in 1979 (see Falk and Pepperl 1980).

It is becoming increasingly evident that the Grand-Moreau region contains one of the better records of Paleoindian-age cultural materials within North or South Dakota. Although the evidence is still quite meager, the list of isolated finds and extant sites within this area is nonetheless impressive. The sites include 39WW15 (Travis 2, Ahler et al. [1977]), 39WW203 (Walth Bay, Ahler et al. [1974]) and 39DW35 (Falk and Pepperl 1980). Isolated occurrences of Paleoindian-age materials include 39C0113 (Sanders et al. 1987), 39DW118, an Agate Basin-like point recovered near Potts Village (Marion Travis, personal communication 1987) and a Folsom point found near the confluence of the Grand and Missouri Rivers (Travis and Haberman 1983). All of these Paleoindian cultural materials occur in or immediately adjacent to the Mt1 or Mt2 terraces. Whether it is a site or isolated find, it seems apparent that Paleoindian-age cultural deposits are present in segments of the Grand-Moreau region and appear to generally correlate with the loess-capped terrace locations.

One of the more significant aspects of the project area is that it contains four of the five "type sites" of the Plains Woodland, Sonota Complex (39DW233, 39DW240, 39DW242 and 39DW252). The Arpan Mounds (39DW252) site location was inundated during the present project. When these sites were excavated by R. L. Neuman (1975) in the early 1960s, only Stelzer (39DW242) contained cultural debris obviously associated with an occupation. The remaining sites were thought to consist only of burial mounds. As a result of erosive wave action occupational debris was found at Grover Hand (39DW240) during the present investigation. In addition, Sonota Complex occupational debris was also found at the nearby 39DW256, which may also contain a burial mound. This suggests that occupational areas may be more commonly associated with the burial mounds than previously thought and that Neuman's excavations focused on the visually more obvious burial mounds. Based on these findings, an occupational area may also be present at Swift Bird (39DW233) but has yet to be exposed (see Chapter Six).

The present investigation has essentially revealed that the use of the Grand-Moreau region by the Sonota Complex groups was more intense than previously thought. Reasons for the occurrence of Sonota Complex manifestations within this particular area of the Middle Missouri subarea are unclear. Reeves (1983:185) believes that the Sonota Complex is essentially the Plains derived and oriented hunting and gathering "Besant" culture which had incorporated some cultural traits (i.e., burial mounds, ceramics and organizational abilities) from interactions with Eastern Woodland groups (e.g., Hopewell). Reeves (1983:189-192) provides the following summary:

Besant in the Northwest Plains evidences a basic adaptation similar to Pelican Lake. Its technology, as far as can be seen, is no more efficient in terms of energy extraction or in offense/defense. There are some differences in terms of mobilization. Better lines of trade and/or transport may be inferred from the tremendous quantities of Knife River flint utilized in Besant sites in the far west: Muhlbach is over 600 air miles from the quarries. This evidence points to well-developed and strong lines of communication between the groups on the Middle Missouri and those on the Northwestern Plains. One might speculate that Besant peoples had new methods of water transport which were very effective on the river systems....

Expansion of the Besant Culture west to the Missouri and beyond occurred as a result of participation on the Interaction Sphere and pressure by the high status groups to gain direct control of the economic resources which were being traded into the Hopewellian centers....

Knife River flint, obsidian, grizzly bear teeth and perishables such as bison hide and dried meat may have been traded by Besant to Hopewell. In return Besant received copper, antler pins, Olivella, conch and dentalium shell ornaments; pottery, and possibly perishables such as corn....

This participation caused a change in social organization and communication systems with the consequence that cultural and

perhaps physical dominance over some indigenous TUNAXA [Avonlea] peoples was accomplished in a relatively brief interval ca. A.D. 1-250. This expansion gave Besant Peoples access to obsidian and Knife River flint quarries and the bison-rich country of the Northwestern Plains. Trade goods were shipped downriver and overland to the Illinois and Ohio Hopewellian centers in return for certain perishable and non-perishable goods.

It is evident that their access to Obsidian Cliffs was short-lived and, although they possessed a more complex social organization their population numbers and technology were inadequate to completely displace all TUNAXA population, who, we may conjecture, regained control of the obsidian quarries and gained a technological advantage in the bow and arrow.

If Reeves' (1983) reconstruction is accepted, then the concentration of Sonota Complex sites in the Grand-Moreau region and project areas, specifically, would seem to imply a major stopping locale in the east-west trade network. Lehmer (1971:169) has stated that the historic earthlodge villages, such as the Leavenworth site (39C09) located north of the confluence of the Grand and Missouri rivers, were positioned to take advantage of the old east-west trade network. As with 39C09, the proximity and concentration of the Sonota Complex sites to the Grand River, a natural route to the west, may be due to their role in this trade network. The recovery of exotic materials such as copper, dentalium and obsidian from the Sonota Complex sites supports this hypothesis.

The importance of this area may also be reflected in the number of burial mounds located in the Grand-Moreau region. In addition to the five Sonota Complex sites investigated by Neuman (1975), five sites (39C081, 39C086, 39C0206, 39DW255 and 39DW256) near the confluence of the Grand and Missouri rivers contain burial mounds (see Sanders et al. 1987 and Volume 2, this report). The concentration of burial mounds in this area would also suggest a religious/ceremonial importance to this region.

As a group, the Sonota Complex sites are indicative of an intensive utilization of the project area. Whether or not these sites represent trade/ceremonial centers requires further substantiation. The sites which occur within the project area (39DW233, 39DW240 and 39DW242) have demonstrated their contribution to the understanding of the region's prehistory and should therefore be considered for thematic nomination to the National Register of Historic Places.

The Plains Village period is also well-represented within the project area. Twenty-five percent of the investigated sites are attributable to this period, with additional sites occurring in the immediate vicinity (see Volume 2, Appendix B). The investigated sites include seven earthlodge villages (39C019, 39C0202, 39DW1, 39DW101, 39DW230, 39DW233 and 39DW236) and four artifact scatters (39C0145, 39DW110, 39DW123 and 39DW256). These sites vary in their integrity and eight of the sites are associated with the Extended Coalescent variant. Two sites (39C0145 and 39DW256) are affiliated with the Extended Middle Missouri variant while site 39DW101 contains evidence of both variants.

Most of the information concerning this period is derived from the investigation of three fortified villages of the Le Compte focus (39C019, 39DW1 and 39DW234). These three sites are nearly identical in village plan, age, and ceramic assemblage. The similarity and close proximity of 39C019 and 39DW234 led Stephenson (1971:85) to propose:

The two sites are so closely related that they must certainly have been occupied by the same people or by people who would have thought of themselves as being of the same sub-tribal group perhaps on the level of a band organization. They may have been two villages of the same people each held together by different leaders and occupied contemporaneously. Alternatively, one or the other may have been settled first and, for reasons that we have no way of knowing, part or all of the group later moved to the other location. If this is so, there is no present evidence of which was earlier and which was later.

Molstad Village (39DW234) is a National Historic Landmark. The documented contribution of Molstad Village, Potts Village (39C019) and the potential information from 39DW1 suggests that these three Le Compte focus sites within the project area be considered as eligible properties.

The importance of these sites are related to research topics concerning both internal and external relationships. Buechler (1984:51) cites Tabeau (see Abel 1939; Parks 1979) as stating that there were ten different, autonomous Arikara groups. Comparisons of the artifact assemblages of these three sites could yield information concerning this question.

Additional questions concern the relationships of the Le Compte focus sites to the non-fortified Extended Coalescent sites within the project area and the Grand-Moreau region in general. Lehmer (1971:120, 127) considered the latter sites as being later than the Le Compte focus sites, however this has yet to be established. An example of the need for chronological data is the compact, fortified Extended Coalescent Davis site (39C014). This site is located at the confluence of the Grand and Missouri rivers and is very different in village plan than the rest of the Extended Coalescent sites in the area. While Lehmer (1971:127) considered this site to be a late manifestation of the Extended Coalescent, radiocarbon dates place it in the 14th century (Ahler 1977b), nearly 200 years earlier than expected. Refinement of the temporal positions of these sites will aid in determining the relationship of each village to one another as well as their relationship to the Middle Missouri Tradition sites in this area and North Dakota as well.

As noted above, four Plains Village artifact scatters are also present within the project area. Site 39DW110, situated on a high bluff overlooking the Moreau River, contains extensive, intact cultural materials. This site may be a prime example of an off-village campsite. Investigation of this site could provide extensive information concerning the activities occurring at such sites, especially in comparison to the earthlodge villages.

The historic sites primarily consist of abandoned farmsteads, depressions, and trash scatters. The original town of Promise was also

recorded, as were the Le Beau cemetery and a church and associated cemetery. Except for a log cabin at Promise (39DW112), no standing structures were present. The lack of structural materials at many of these sites indicate that the buildings were removed prior to total abandonment of the site.

Documentary evidence indicates that only Promise (39DW112) and 39DW96, both located adjacent to the floodplain of the Moreau River were occupied prior to 1900. Artifactual materials from 39DW104 and 39DW115, also located along the Moreau River, date these sites around 1880-1920. Site 39DW104, where glass seed beads and catlinite pipe fragments were recovered, is the only site with artifacts firmly associated with a Native American occupation. Most of the remaining sites generally date from 1920s to 1950s based on the observed cultural material. However, earlier, unexposed cultural materials could be present at some of these sites. There is a considerable range in the types of recorded historic sites which, through further investigation, could provide the basis for examining Sioux settlement and subsistence patterns and acculturation during the reservation era.

Analytical Results

The analysis of information gathered during this project was primarily confined to examining site distribution patterns (Chapter Nine) and the area's geoarcheological potential (Chapter Eight). Infield artifact analyses and analysis of collected diagnostics were also conducted to aid in determining site age or cultural affiliation as well as potential site significance. This information is incorporated into the individual site descriptions (Chapters Six and Seven).

The geoarcheological investigation resulted in the delineation of six landforms consisting of Mt1, Mt2, and Mt4 river terraces, the Schamber surface, the Moreau River floodplain and the Missouri "Breaks". As with the neighboring geoarcheological investigation (Sanders et al. 1987), the landforms with the highest potential are the loess-capped Mt1 and Mt2 terraces. As noted earlier in this chapter, these landforms also appear to have the greatest potential for containing Paleoindian-age cultural materials. These landforms also appear to be the favored location for the Plains Woodland and Plains Village sites (see Chapter Eight).

The "Breaks" also contained a large number of sites and isolated finds, however, most of these appear to be rather ephemeral which may correlate to the erodability and self-churning characteristics of the soils occurring within this landform. As a result, this extensive landform was considered to have the lowest potential for containing in situ cultural deposits.

The analysis of site distribution patterns focused on the comparison of historic and prehistoric site locations to nonsite locations. Statistical analysis resulted in an overall classification accuracy ranging from 49.77 percent for Woodland mounds to 88.75 percent for earthlodge villages. Computer Aided Design (CAD) drawings of this data were also generated which graphically illustrated the project area and the high probability locations of earthlodge villages. This graphic presentation is

considered to have useful applications in illustrating not only where archeological sites are known, but also where they are likely to be found in the future.

Management Recommendations

The management recommendations for the recorded sites are listed in Table 19. This table summarizes the impacts to each site, recommendations for additional work and eligibility for nomination to the National Register of Historic Places. The rate of impact for eligible and potentially eligible sites is also listed in Table 19. More specific information concerning pertinent management recommendations and research topics is presented within the individual site descriptions (see Chapter Six and Seven). One site is a National Historic Landmark, five sites are considered eligible, 22 components at 20 sites are believed to be potentially eligible while 22 components at 21 sites and all 27 isolated finds are not considered eligible. Table 20 provides a quick summary of each site's eligibility.

The criterion utilized to assess each site's eligibility was essentially Criterion D of 36 CFR60.4:

To be considered for listing under Criterion D, a property must have yielded or must have the potential to yield important information about some aspects of prehistory or history, including events, processes, institutions, design, construction, settlement, migration, ideals, beliefs, lifeways, and other facets of the development or maintenance of cultural systems. Criterion D allows consideration of both properties that have yielded important information and that have not yet yielded important information but are likely to do so. Any consideration of a property's eligibility under Criterion D must address (1) whether the property had the information to contribute to our understanding of history or prehistory and whether that information is important (National Park Service 1982:28).

The historic sites were also evaluated according to Criterion B which attempts to relate a site with "the lives of persons significant in our past" (National Park Service 1982:19). None of the historic sites can presently be considered eligible under this criterion, based on the information obtained from the documents and deed and records searches. However, it is possible that some sites, presently deemed potentially eligible, could be associated with important persons, in the event that recommendations of additional archival research be carried out.

Another factor used in assessing significance is the concept of integrity.

The principal test to establish whether a property retains integrity is to ask whether or not the property still retains the identity or character for which it is important. For a property important for its information potential, it is necessary to determine whether the property retains enough of its original

Table 19. List of site management information.

<u>Site Number</u>	<u>Impact/Rate*</u>	<u>Recommendations</u>	<u>Eligibility</u>
39C019	Massive cutbank erosion (1)	Prehistoric component-mitigation/preservation Historic component - no further work	Prehistoric component eligible. Historic component not eligible
39C0143	Inundation and wave action	No further work	Not eligible
39C0144	Minor sheetwash (3)	Test excavation	Potentially eligible
39C0145	Cutbank erosion (2)	Test excavation and periodic monitoring	Potentially eligible
39C0202	Cultivation (3)	Test excavation	Potentially eligible
39DW1	Cultivation, pothunting (3)	Mitigation/preservation	Eligible
39DW35	Grazing/slumping	No further work	Not eligible
39DW89	Sheetwash erosion	No further work	Not eligible
39DW90	None	No further work	Not eligible
39DW91	Sheetwash erosion	No further work	Not eligible
39DW92	Buildings removed	No further work	Not eligible
39DW93	Buildings removed	No further work	Not eligible
39DW94	Sheetwash erosion	No further work	Not eligible
39DW95	Buildings removed, recent inundation	No further work	Not eligible
39DW96	Buildings removed	Archival research & test excavation	Potentially eligible
39DW97	Minor erosion	No further work	Not eligible
39DW98	Minor erosion	No further work	Not eligible
39DW99	Major sheetwash erosion	No further work	Not eligible
39DW100	Grazing, possible removal of burials	Archival research & periodic monitoring	Potentially eligible

Table 19 (continued). List of site management information.

<u>Site Number</u>	<u>Impact/Rate*</u>	<u>Recommendations</u>	<u>Eligibility</u>
39DW101	Massive cutbank erosion (1)	Test excavation	Potentially eligible
39DW102	Completely eroded	No further work	Not eligible
39DW103	Massive erosion (1)	Test excavation	Potentially eligible
39DW104	Buildings removed	Test excavation	Potentially eligible
39DW105	Grazing	No further work	Not eligible
39DW106	Minor sheetwash erosion	No further work	Not eligible
39DW107	Minor slumping (1)	Test excavation	Potentially eligible
39DW108	Possible removal of burials	Archival research & periodic monitoring	Potentially eligible
39DW109	Minor sheetwash erosion (3)	Test excavation	Potentially eligible
39DW110	Minor sheetwash erosion (3)	Test excavation	Potentially eligible
39DW111	Overgrazing, sheetwash	No further work	Not eligible
39DW112	All but one building removed		Potentially eligible
39DW113	Minor sheetwash erosion	No further work	Not eligible
39DW114	Cutbank erosion (3)	No further work	Not eligible
39DW115	Minor sheetwash (3)	Archival research & test excavations	Potentially eligible
39DW116	Partially removed	No further work	Not eligible
39DW117	Cutbank erosion (2)	Archival research & test excavations	Potentially eligible
39DW123	Major sheetwash erosion (1)	Test excavation	Potentially eligible

Table 19 (continued). List of site management information.

<u>Site Number</u>	<u>Impact/Rate*</u>	<u>Recommendations</u>	<u>Eligibility</u>
39DW230	Cutbank erosion (3)	Analyze and evaluate excavated data	Potentially eligible
39DW233	Cutbank erosion (2)	Monitor cutbank	Eligible
39DW234	Cutbank erosion cultivation (3)	Mitigation/preservation	National Historic Landmark
39DW236	Cultivation (2)	Test excavation	Potentially eligible
39DW240	Cutbank erosion (2)	Prehistoric component. test excavation. Historic component - no further work	Prehistoric component eligible. Historic component not eligible
39DW242	Wave action/ inundation (1)	Mitigation/preservation. No further work	Prehistoric component eligible. Historic component not eligible
39DW256	Wave action/ inundation (1)	Test excavation	Prehistoric component potentially eligible. Historic component not eligible

* Priority and rate of impact for eligible and potentially eligible sites.

- (1) High
- (2) Medium
- (3) Low

Table 20. Summary list of site eligibility.

<u>Eligible</u>	<u>Potentially Eligible</u>	<u>Not Eligible</u>
39C019 P*	39C0202	39C019 H*
39DW1	39C0144	39C0143
39DW233	39C0145 **	39DW35 **
39DW234	39DW230	39DW240 H*
39DW240 P*	39DW236	39DW242 H*
39DW242 P*	39DW256 P*	39DW256 H*
	39DW92	39DW89
	39DW93	39DW90
6 sites and	39DW96	39DW91
components	39DW100	39DW94
	39DW101	39DW95
	39DW103	39DW97
	39DW104	39DW98
	39DW107	39DW99
	39DW108	39DW102
	39DW109	39DW105
	39DW110	39DW106
	39DW112	39DW111
	39DW115	39DW113
	39DW117 **	39DW114
		39DW116
	20 sites and	
	22 components	21 sites and
		22 components

* Sites with components having different eligibilities (H = historic, P = prehistoric).

** Sites with historic and prehistoric components having the same eligibility.

materials and their spatial relationships to be capable of yielding valuable data....A buried site eligible for its information potential has integrity if the deposits retain enough of their original content and spatial relationships to be capable of yielding valuable data (National Park Service 1982:39-40).

Field assessments of site integrity as well as ability to yield additional significant information involved density, type, and variety of cultural remains, presence/absence of artifact concentrations or features (e.g., hearths, historic or prehistoric depressions, etc.), soil depth, presence/absence of buried cultural materials and surface disturbances. For example, a site comprised of scattered artifacts and occurring within a plowed field would generally be considered to have little integrity or significance. If, however, concentrations of cultural material were present within the plowed area, then the site could be considered to retain a degree of spatial integrity and depending upon the cultural materials present, could be considered worthy of additional investigations. Test excavations were recommended in a number of cases to determine site extent, integrity and research potential. These recommendations were made in lieu of any shovel test excavations since it was believed that a formalized test excavation program would provide more systematic and reliable information concerning site potential than a few scattered shovel tests. These field assessments were later rechecked against known prehistoric and historic chronologies, document searches and pertinent research topics to determine if the site could yield information on the following topics.

Some of the pertinent research topics for the project area have already been presented in the Inventory Results segment of this chapter however, some additional topics which are relevant for the present project area as well as the Grand-Moreau Study Area (Buechler 1984) are also presented. Most of the earlier archeological investigations were primarily concerned with questions dealing with culture history in order to establish a basic cultural chronology. As a result, current research topics are geared towards examining culture change, adaptation and process by refining or supplementing this information through gathering additional chronological, paleoenvironmental and subsistence data. Collection of such data could yield information on the following topics.

- 1) Are the concentration of Sonota Complex sites due to their capitalization on a Hopewellian trade network? And, if so, does Stelzer represent a regional trade center such as the later "Dakota Rendezvous" conducted along the James River (see Haberman 1983)?
- 2) Do the Le Compte focus sites, 39C019, 39DW1 and 39DW234 represent contemporary, autonomous villages as described by Tabeau (Abel 1939; Parks 1979) for the historic Arikara?
- 3) What are the temporal and functional relationships between the Le Compte focus sites and the other Extended Coalescent earthlodge villages in their immediate vicinity?
- 4) How do the faunal, ceramics and lithic assemblages present at off-village sites such as 39DW110 compare to those recovered from the local earthlodge villages?

- 5) As well as can be determined, all of the historic sites are attributed to Reservation Period Sioux occupation. What do these sites indicate concerning Native American acculturation or settlement and subsistence practices compared to prehistoric or contemporary Euroamerican occupations?

Another important consideration presented in Table 19 involves the adverse impacts to the eligible or potentially eligible properties within the project area. The most devastating impacts are those relating to the impoundment of the Missouri River: inundation and wave action. Fluctuations in the lake level are perhaps the most destructive since a site could be above water one year and in no danger of erosion, while in another year higher water levels could start eroding the site away. The massive amount of cultural material on the beach at 39C019, is a prime example.

The erosion of the lake shore by wave action not only impacts sites directly on the shoreline, but can also impact sites much farther away. The erosion of the land along the shore decreases the support of the upland areas, often causing massive slumping. The exposure of areas such as these along the shoreline facilitates the location and identification of many sites along the Missouri Trench. While this is a boon to many archeologists, it also aids nonprofessionals in the location of many sites. Although many of these people are content to merely look at these materials or surface collect off the beach, others are more destructive, digging into features exposed in the cutbanks. Unfortunately, the creation of Lake Oahe has not only exposed many sites, it has also provided easy access by boat to many sites which were originally more difficult or time-consuming to reach by land. As a result, the Corps of Engineers management of these irreplaceable resources becomes even more critical and important before they are totally destroyed.

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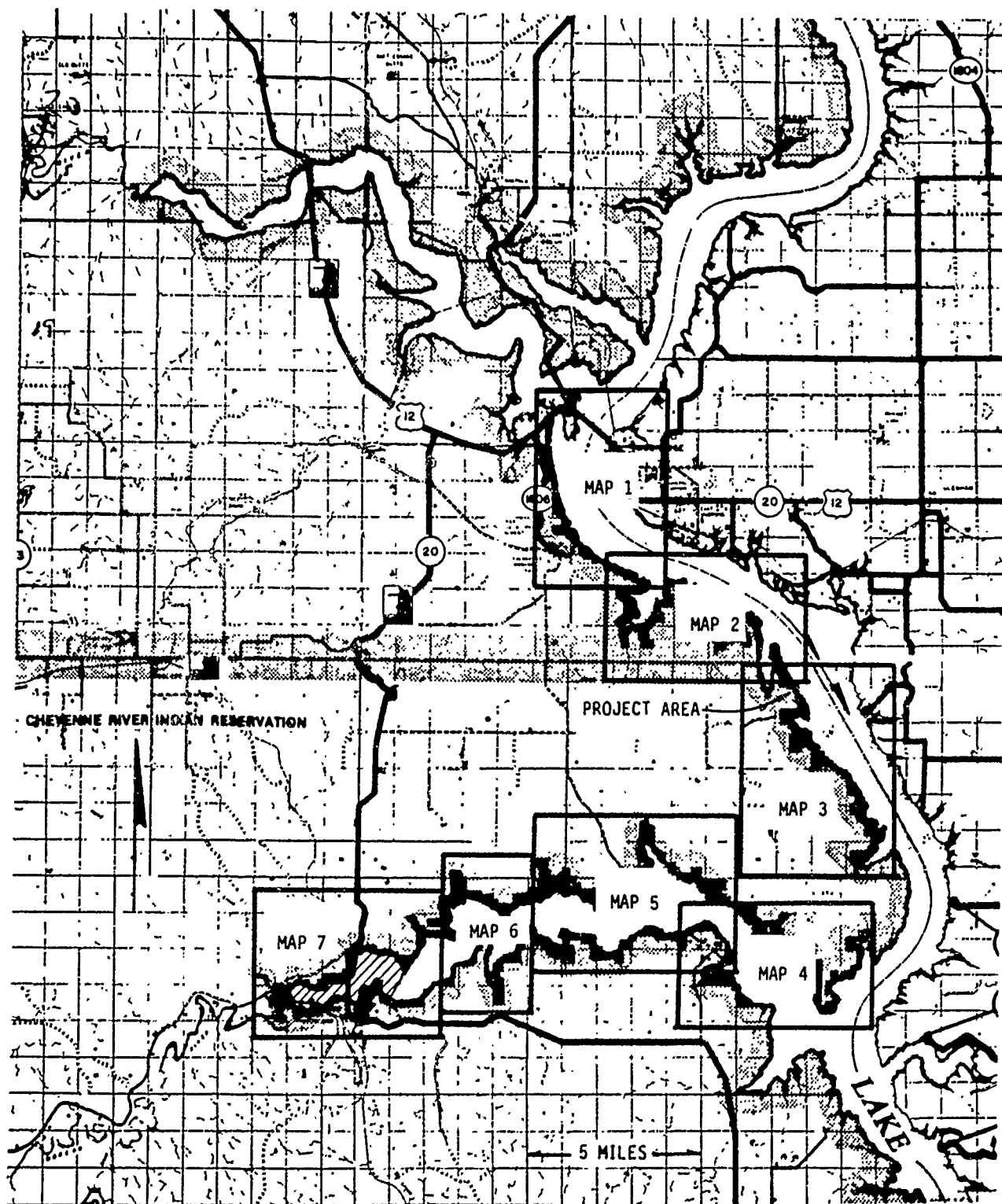
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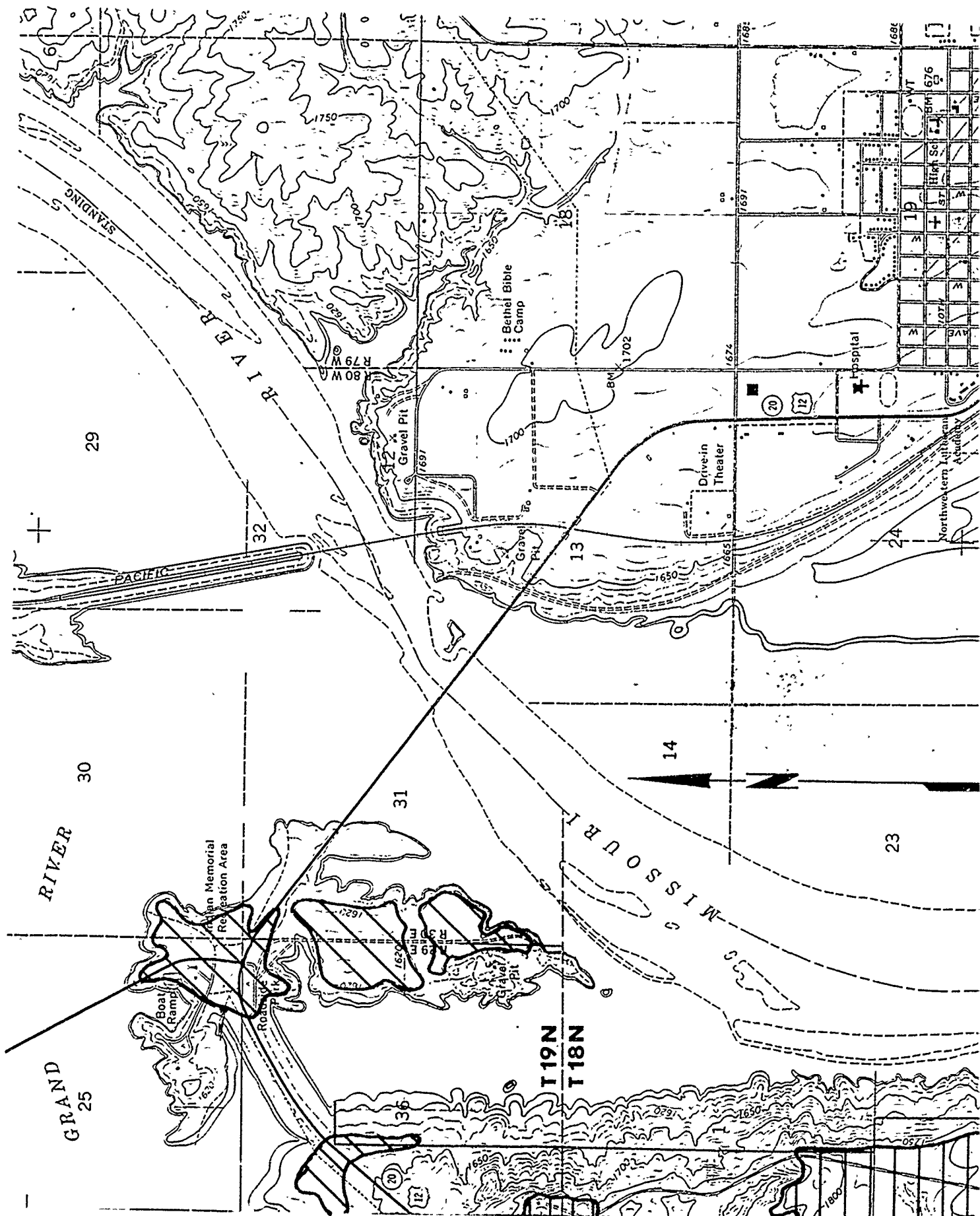
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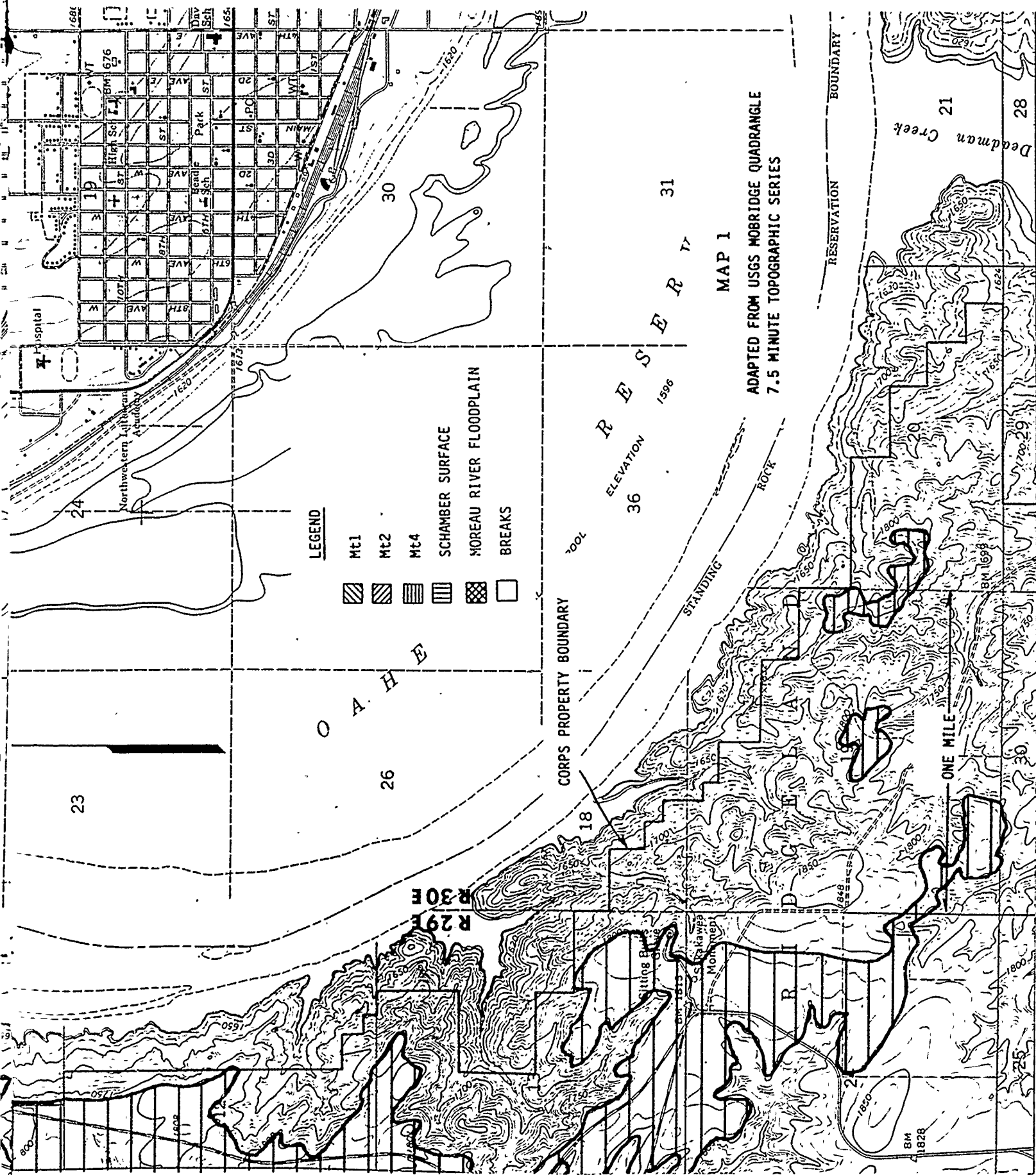
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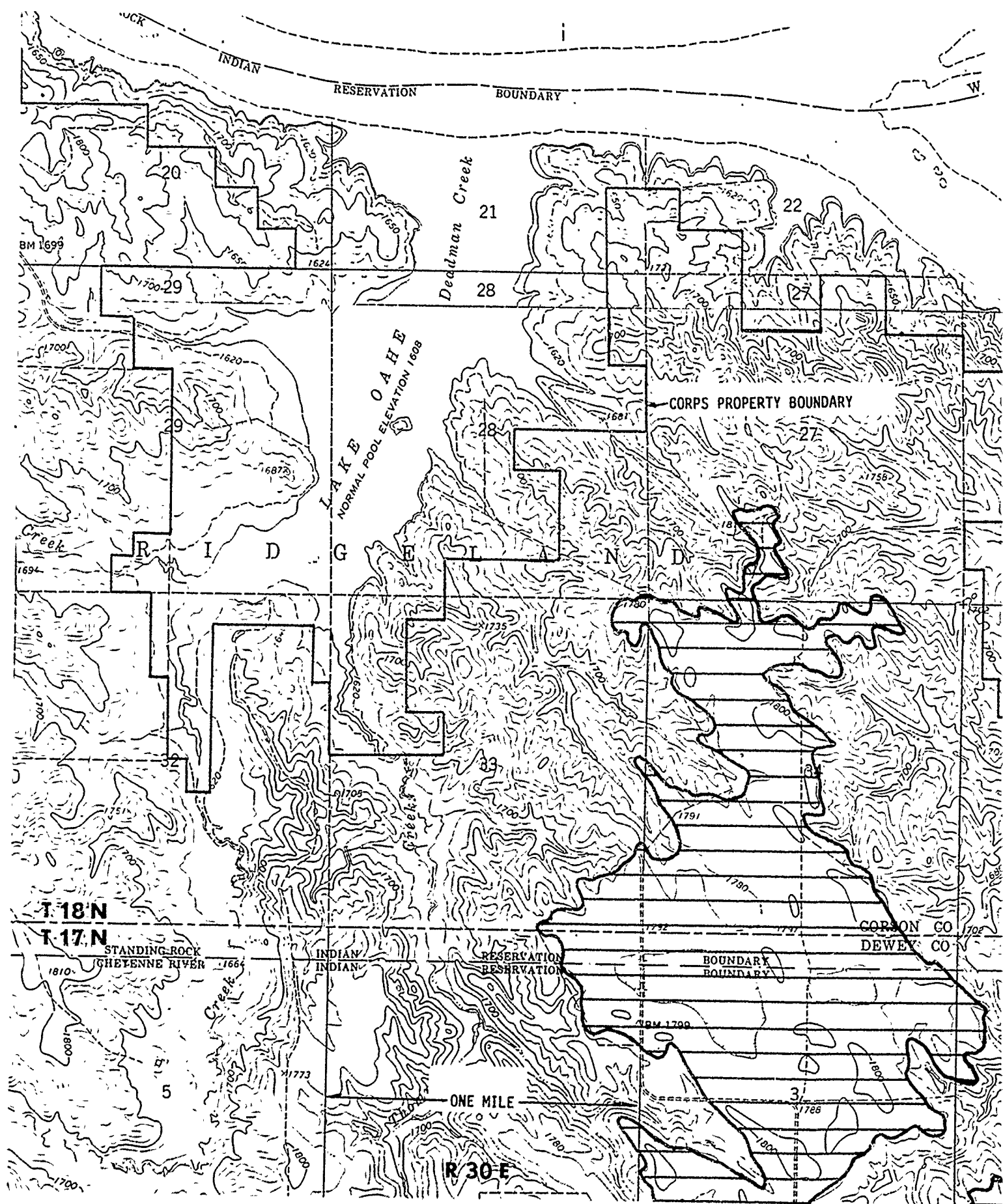
APPENDIX A
LANDFORM ASSOCIATION MAPS



Key to landform association maps.











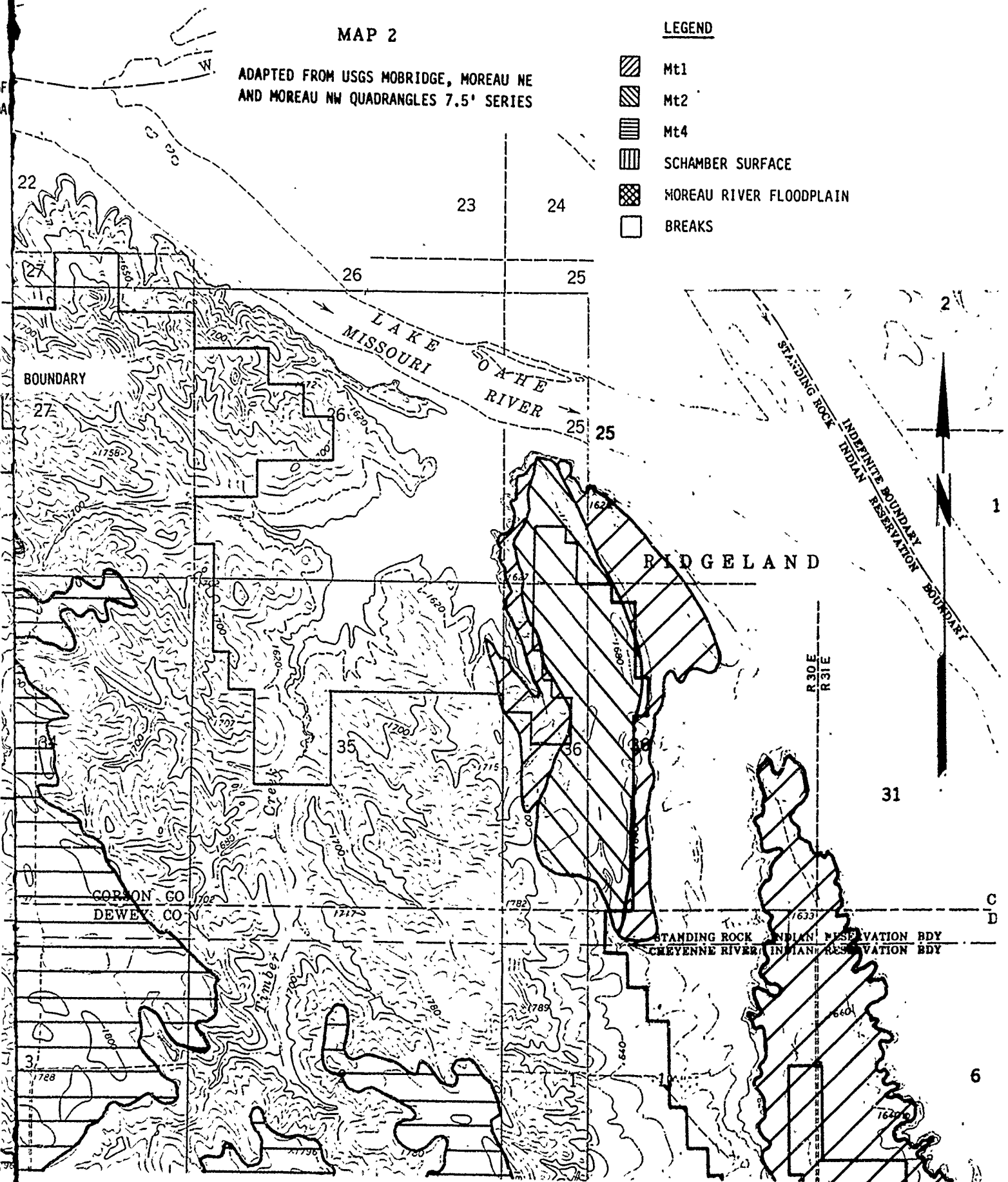


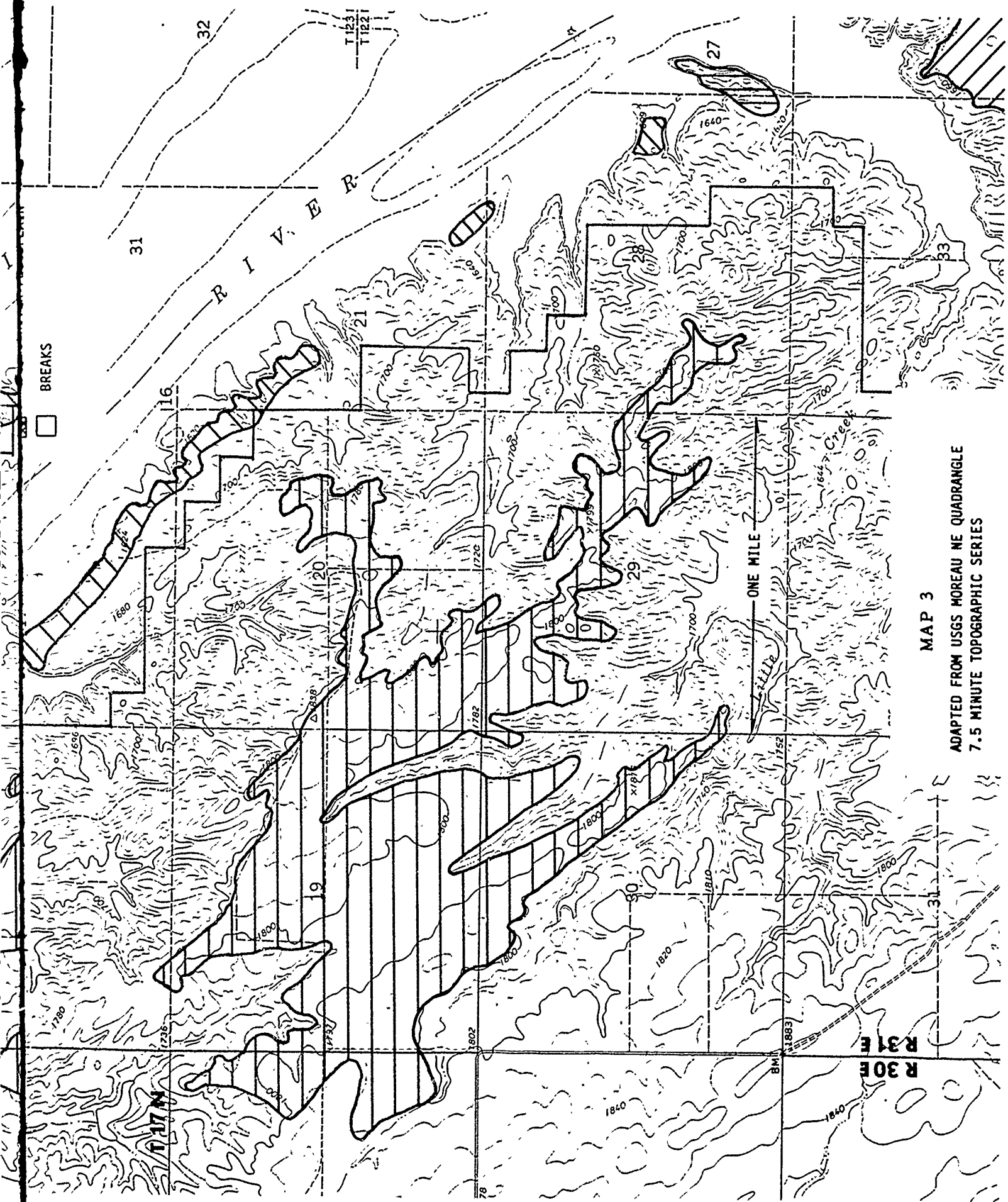
MAP 2

ADAPTED FROM USGS MOBRIDGE, MOREAU NE
AND MOREAU NW QUADRANGLES 7.5' SERIES

LEGEND

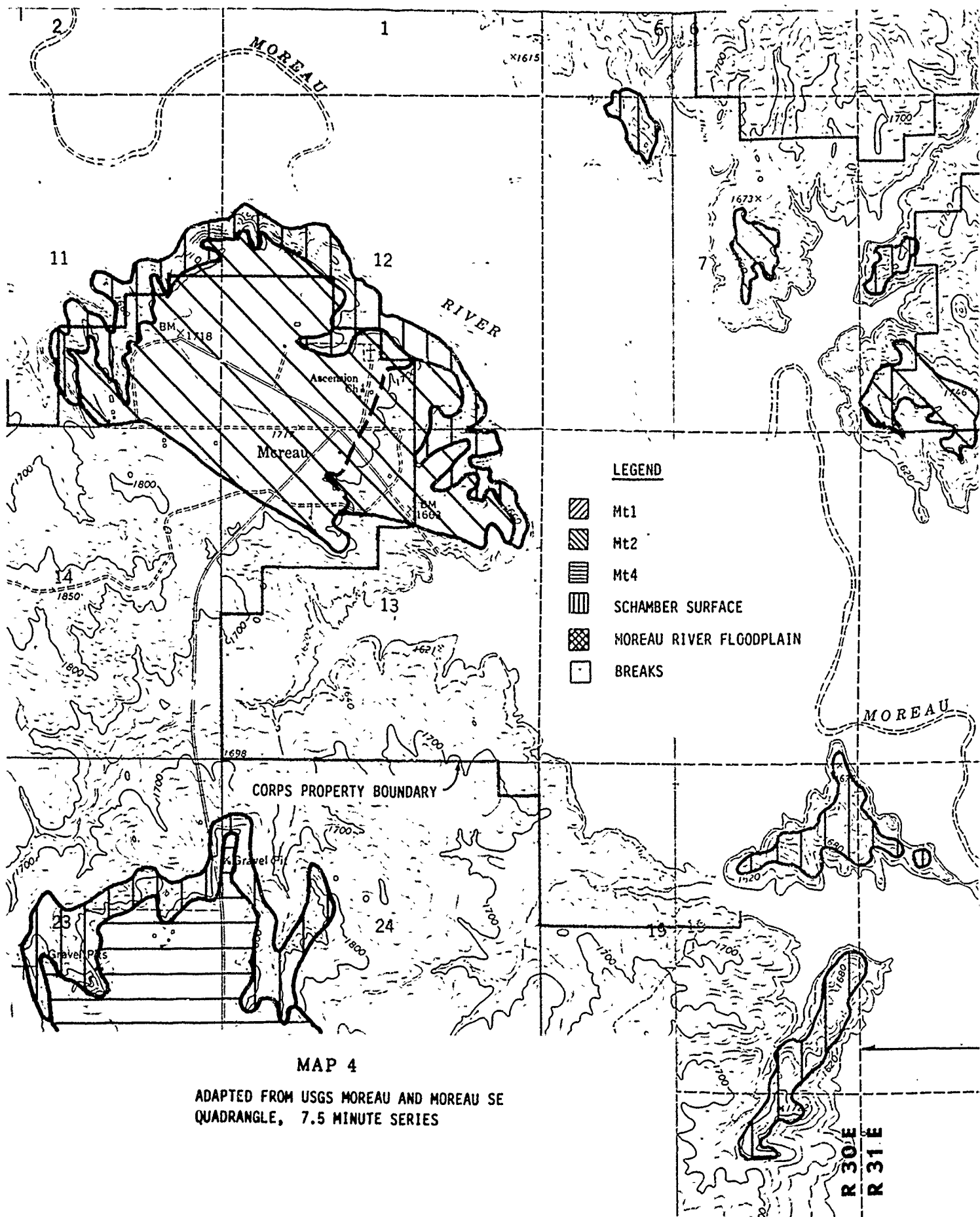
-  Mt1
-  Mt2
-  Mt4
-  SCHAMBER SURFACE
-  MOREAU RIVER FLOODPLAIN
-  BREAKS





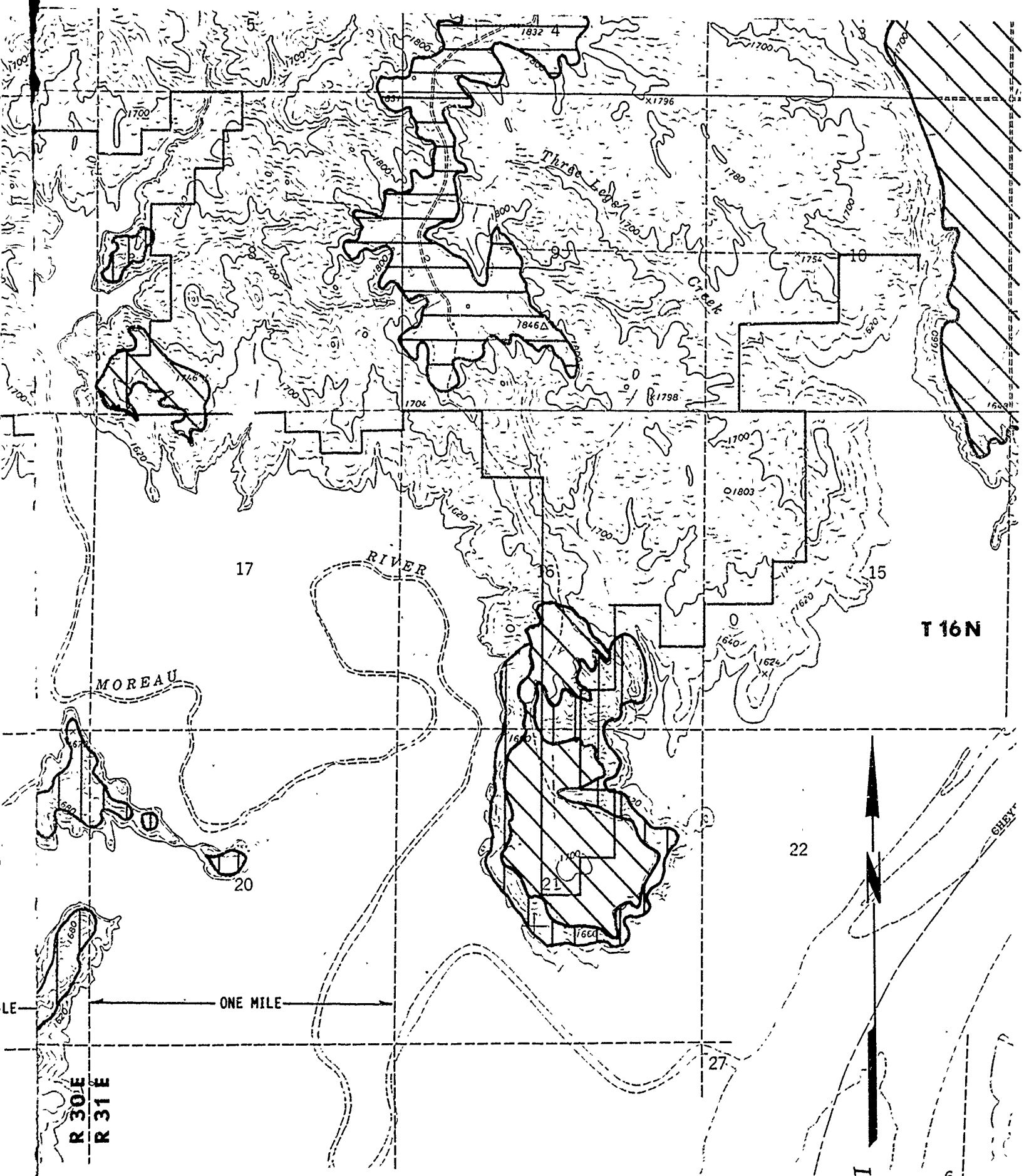
MAP 3

ADAPTED FROM USGS MOREAU NE QUADRANGLE
7.5 MINUTE TOPOGRAPHIC SERIES

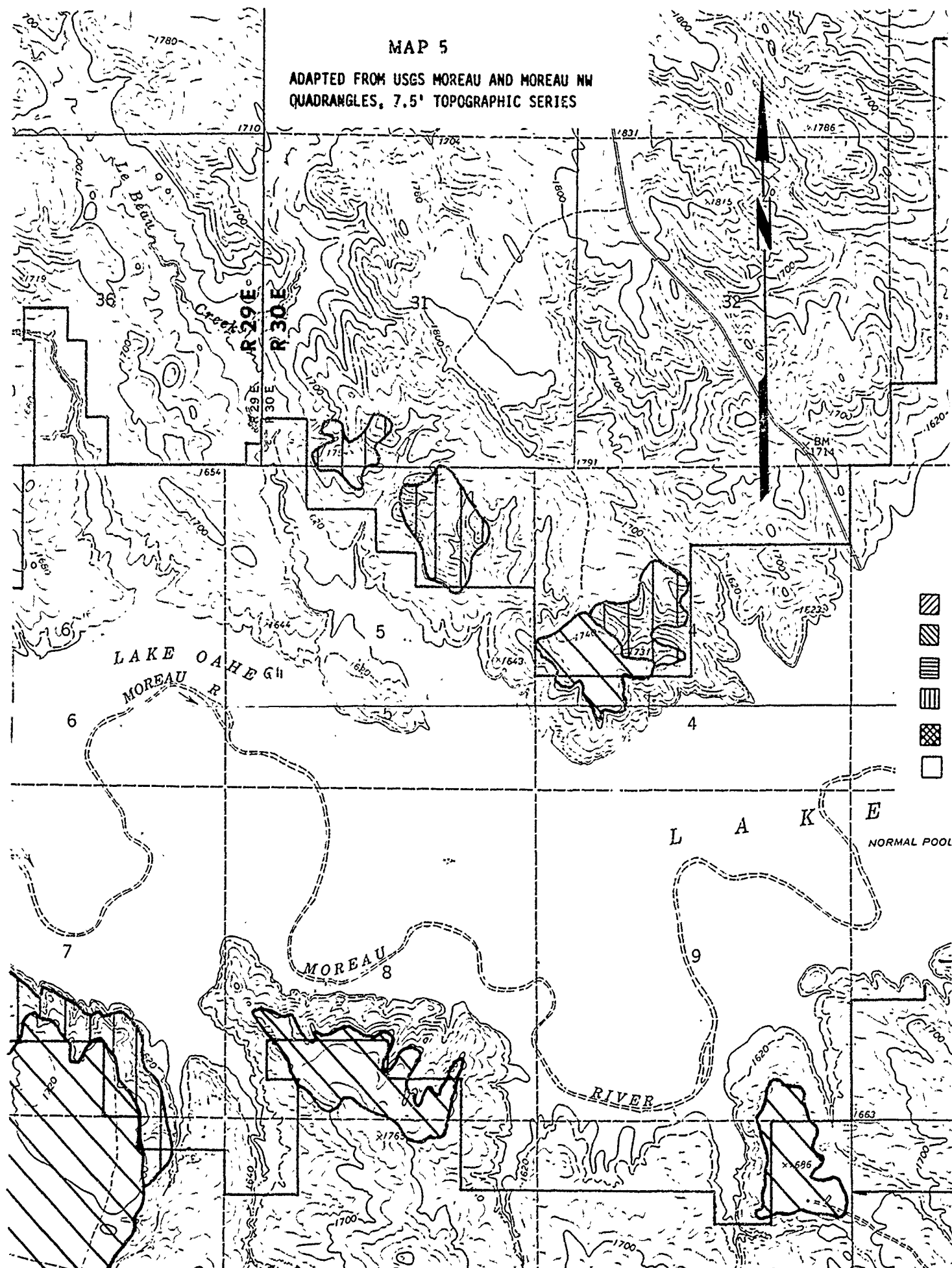


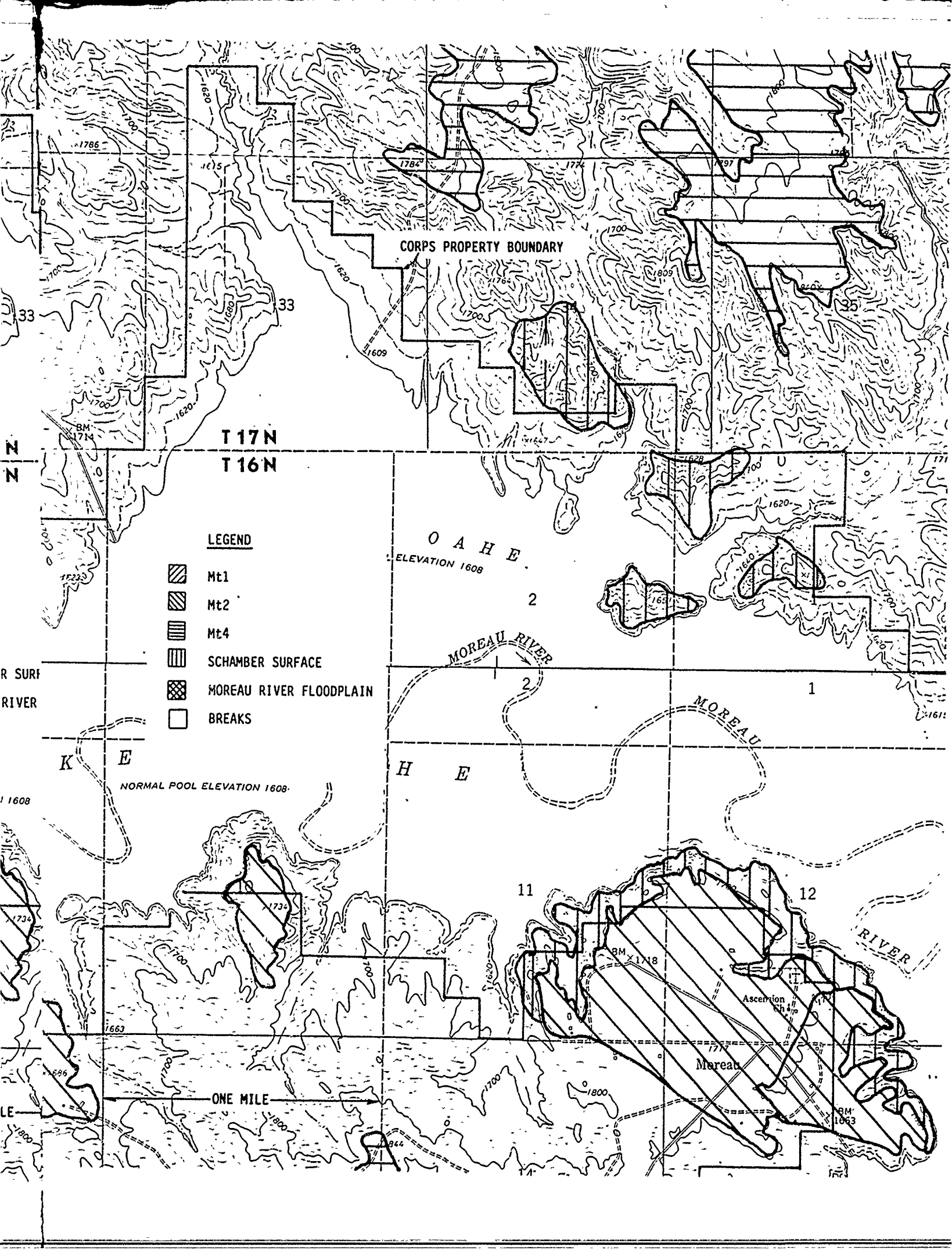
MAP 4

ADAPTED FROM USGS MOREAU AND MOREAU SE
QUADRANGLE, 7.5 MINUTE SERIES



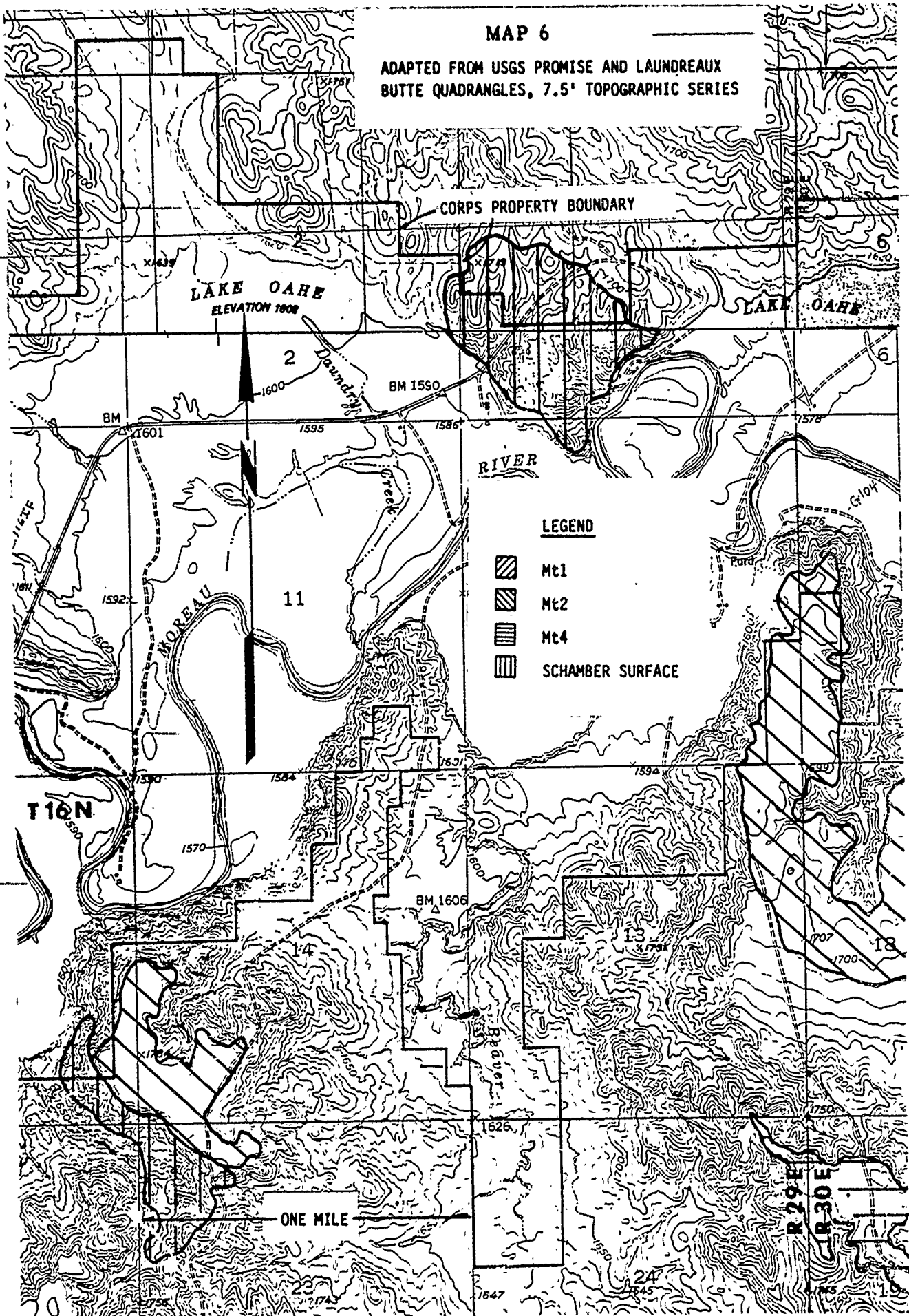
ADAPTED FROM USGS MOREAU AND MOREAU NW
QUADRANGLES, 7.5' TOPOGRAPHIC SERIES





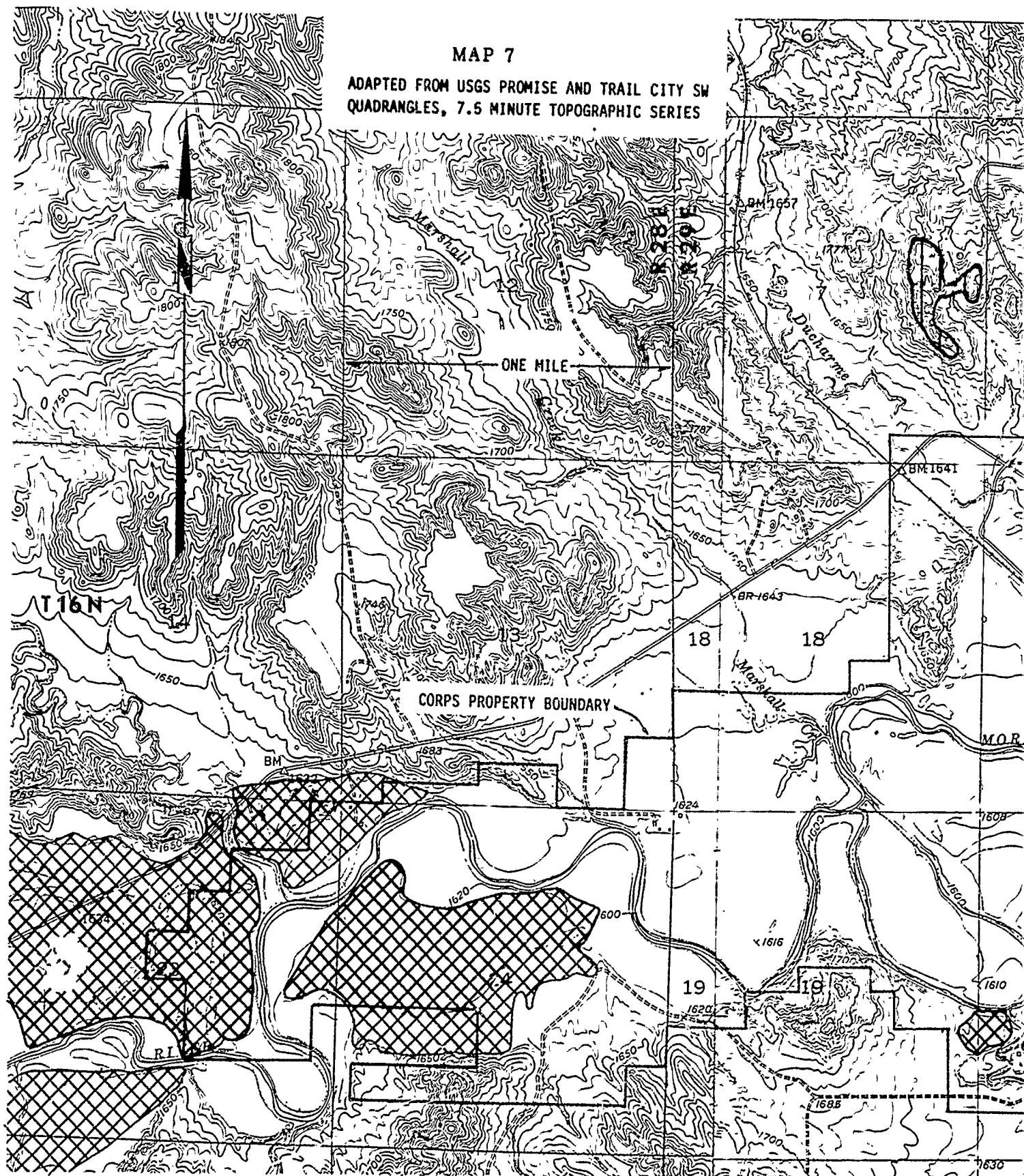
MAP 6

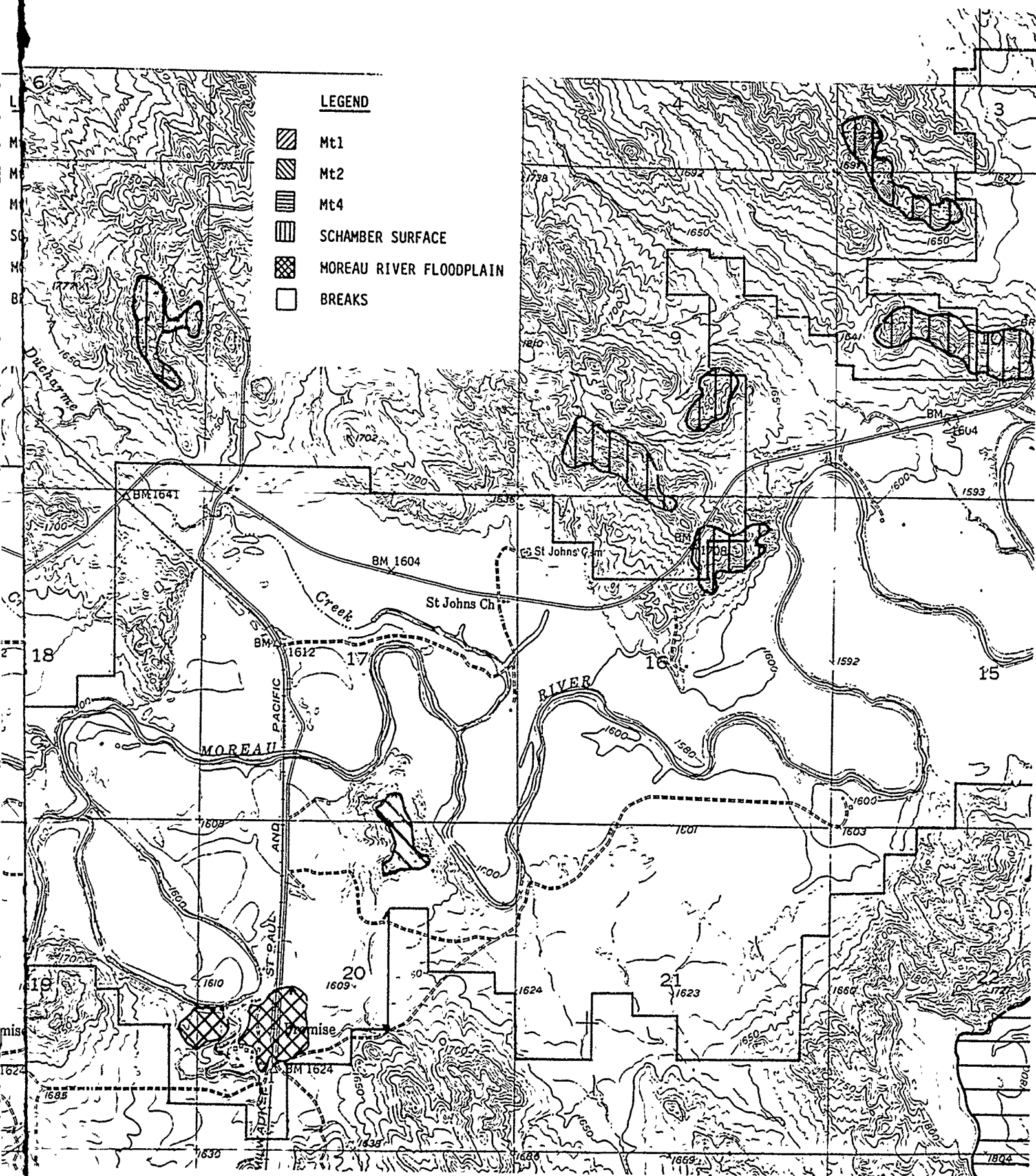
ADAPTED FROM USGS PROMISE AND LAUNDREAUX
BUTTE QUADRANGLES, 7.5' TOPOGRAPHIC SERIES



MAP 7

ADAPTED FROM USGS PROMISE AND TRAIL CITY SW
QUADRANGLES, 7.5 MINUTE TOPOGRAPHIC SERIES





APPENDIX B
MODEL OF EARTHLODGE VILLAGE LOCATIONS (INSERT)

T. 19 N.
T. 18 N.

R. 28 E.

R. 29 E.

R. 29 E.

R. 30 E.

CORSON COUNTY
DEWEY COUNTY

MOREAU

R. 29 E.

R. 30 E.

